

**ENVIRONMENTAL COMPLIANCE GUIDEBOOK
FOR WHOLESALE FOOD FACILITIES**



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(First Edition)**

ENVIRONMENTAL COMPLIANCE AND OPERATIONAL GUIDEBOOK FOR WHOLESALE FOOD FACILITIES

This guidebook is a product of the Regional Wholesale Food Processors Committee (RWFPC), a collaborative partnership between the Food Industry Business Roundtable (FIBR) and the Environmental Health Departments of Los Angeles, Orange, San Bernardino and San Diego Counties and the City of Vernon. The RWFPC is an effort to expand communications and services among the food industry and regulatory communities of Southern California.

It must be emphasized that this document is intended to provide guidance to industry relative to compliance with environmental programs that are inherent in most wholesale food facilities. This document suggests best practices that owners, builders, and operators may consider and implement in their respective facilities. However, this document must not be interpreted as code requirements.

Wholesale food facilities or establishments are businesses that receive, store, handle, process and/or distribute food items to retail facilities. Generally, wholesale food facilities or establishments such as warehouses do not conduct retail sales or distribution. Wholesale food facilities include dry and cold storage warehouses that do not handle open food products. Wholesale food establishments also include commercial food processing facilities that are subject to inspections by the federal and state agencies

In many local and state health departments, programs are specialized to the extent that one section may exclusively inspect the food safety portion of a facility while another inspects the hazardous materials handling operations of the same facility. Consequently, a facility can expect different inspectors assessing different components of the operations. These guidelines are intended to assemble the compliance standards of various programs into one document for easy reference.

These guidelines are presented in general terms and specific statutes and regulations, if available, are included in the attached appendices. Additionally, this document is providing a compilation of operational guidelines that hopefully can assist facility owners and operators in providing the appropriate response to specific significant incidents that are not encountered daily but may have critical public health and occupational impacts.

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I. Introduction

Generally, wholesale food facility facilities are relatively complex and large operations where high volumes of food are handled, processed, packed, stored and distributed in large facilities. Inherent to these operations is the presence of materials and resources such as forklifts, large storage racks, chemicals for sanitation, large boilers, and large refrigeration units. Consequently, the presence of some of the materials such as sanitation chemicals and forklift gases (propane) places these facilities under the regulatory oversight of many various environmental programs and agencies. This document was created to provide wholesale food facilities with a general guide to many, but not all, of the environmental programs.

Various reference materials, guides, and regulation are included in this document to provide wholesale food facilities with more detailed information on the regulatory background of these programs. It must be emphasized that this is a general guide, and not to be interpreted a compliance manual. Wholesale food facilities MUST always consult with the appropriate local enforcement agency to assure compliance with these programs.

II. Water

Water is a critical component of any food processing or warehouse facility. In addition to sustaining employee health, it is used both in the processing of food and in sanitation activities. The wholesomeness of the water delivered or generated at your facilities is maintained by the water supplier and is regulated by both state and local health departments. Wholesale food facilities are required to protect the water that is being delivered to their facilities by assuring that the plumbing connections are in compliance with the local plumbing codes and cross connections to potentially contaminating equipment or activities do not exist. This section is intended to provide wholesale food facilities with an awareness of the water supply and the inherent obligations that they may need to carefully consider.

Water is derived from deep water wells that draw from underground aquifers, or from rivers and lakes. Water is then carefully treated and disinfected, stored in large storage tanks or facilities and distributed through an extensive network of pumps and piping systems.

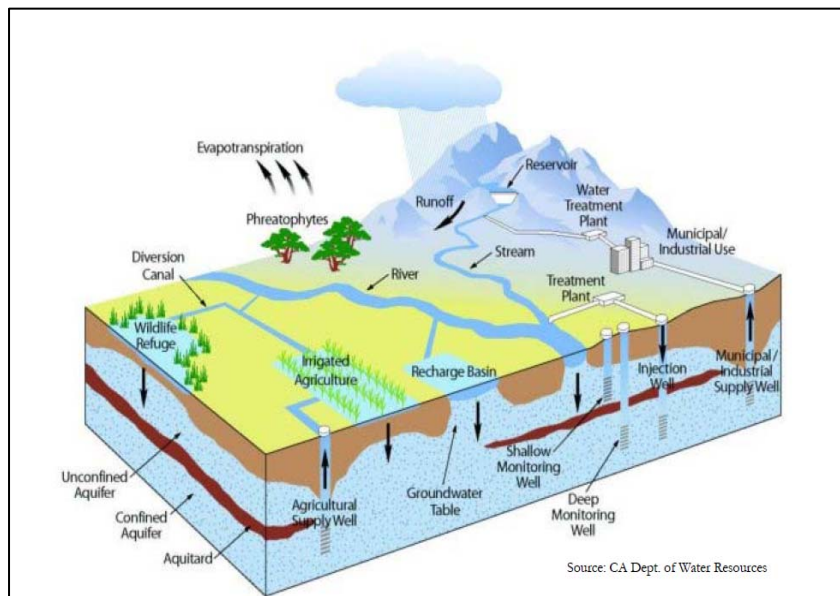


Figure 1 – Hydrologic Cycle

A. Municipal Water Systems

In general, water delivered to large communities and food facilities complies with the provisions of the Safe Drinking Water Act and is considered potable and safe for human consumption. All water systems are overseen either by the Drinking Water Branch of the

California Department of Public Health or the local health departments. The water systems' primary mission is to provide users with a safe and sufficient potable water supply that meets current standards. However, it must be emphasized that this obligation ends at the point where the water enters the facility. At this point, the facility, the property owners and the water users assume the obligation of assuring that the water conveyed throughout the facility is free of cross connections or contamination that may impact the facility or the main water supply. In addition, they are responsible for assuring that the water is safe for all the water users in the facility. Sometimes, the water company may require the end users to install backflow prevention devices at the service meter to assure that activities in the facilities do not impact water quality at the main service lines. Backflow prevention devices are mechanical units which prevent the backward flow of water.



Photo 1 – Water well and storage tank

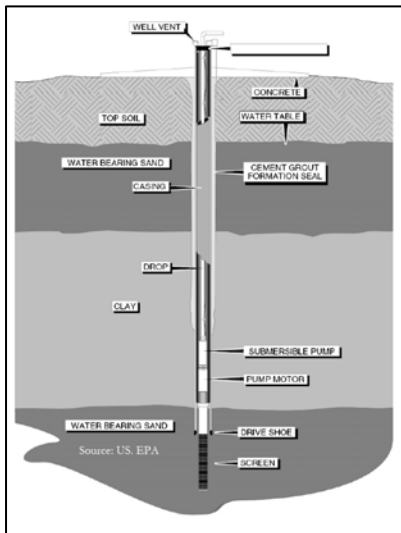


Figure 2 – Water well details

Under the California Safe Drinking Water Act, the water purveyors are required to conduct a series of routine testing for bacteria, inorganic chemicals, volatile organic compounds (VOCs) and radiation. The results of the tests conducted on the water are disclosed in the annual water quality reports that are sent to all water users usually on the first quarter of the year proceeding the reporting period.

Most large community water systems deliver water that contains a residual disinfectant to assure that any bacteria that may enter the water system is adequately treated. Most systems use chlorine and the minimum required residual free chlorine is 0.2 parts per million. Many water systems maintain an average free chlorine level of 0.3- 0.7 parts per million.

Municipal water sources can include surface waters such as the Aqueduct, lakes and rivers. Many however install deep water wells with the underlying aquifers as the main water source. Water is then carefully treated according to current standards and stored in tanks. The water is then distributed to a network pumps and water mains, typically found underneath public streets.

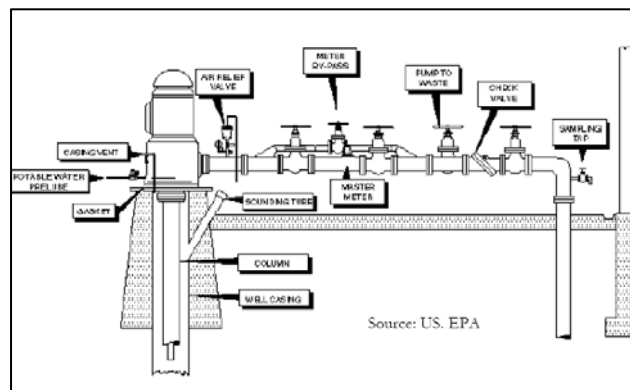


Figure 3 – Water well pump details



Figure 4 – California Department of Public Health – Drinking Water Branch Contact Information

B. Private Water Systems

Facilities that receive domestic water from their own water well and piping system are also required to comply with the provisions of the Safe Drinking Water Act. A facility that acquires domestic potable water from its own well(s) AND serves 25 or more people in a 60 day period within the year, is considered a “non-transient non-community water system” and is subject to the monitoring and reporting requirements indicated in the Safe Drinking Water Act. Small water systems are also required



Photo 2 – Small water system well and storage

to provide all the users with an annual water quality report that summarizes the test results of the preceding reporting period.

Small water systems that serve less than 200 service connections may be overseen by a local environmental health agency or by California Department of Health Services Drinking Water Branch (CDPH). Larger community water

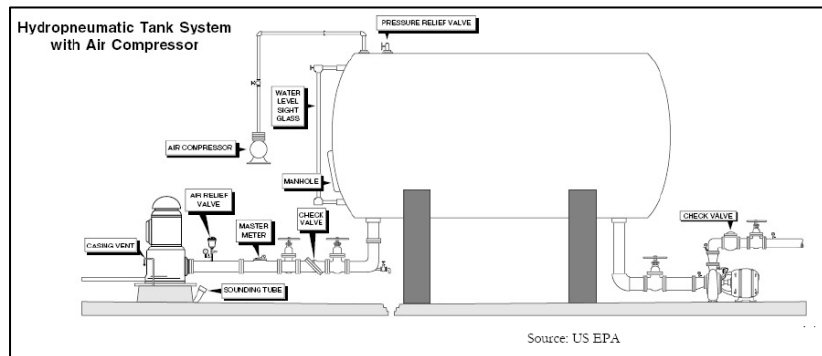


Figure 5 – Water well and pressure pump details

systems that serve more

than 200 service connections are exclusively overseen by California Department Public Health Drinking Water Branch. Local agencies that are granted authority to regulate small community water systems by CDPH are called Local Primacy Agencies (LPA). The following Southern California environmental health agencies have been granted this designation:

1. Los Angeles County Environmental Health
2. San Bernardino County Environmental Health
3. Riverside County Environmental Health
4. San Diego County Environmental Health
5. Kings County Environmental Health

Small community water systems in Southern California that are located in jurisdictions not mentioned above, are under the regulatory oversight of CDPH.

C. Regulated Water Contaminants

Under the California Safe Drinking Water Act, the water purveyors are required to conduct a series of routine testing for bacteria, inorganic chemicals, volatile organic compounds (VOCs) and radiation. The results of the tests conducted on the water are disclosed in the annual water quality reports that are sent to all water users usually on the first quarter of the year proceeding the reporting period.

The following table is a summary of some of the main regulated contaminants and the required testing frequencies:

Table 1 – Water quality testing frequencies

Regulated Contaminant	Frequencies
Bacteria	Monthly – number of samples dependent on population served
Inorganic Chemicals	Once a year. Quarterly if contaminants exceed ½ of the MCL
Volatile Organic Chemicals	Every three years or more depending on the water source of CDPH disgression
Radionuclides	Every four years depending on initial assessments
Trihalomethane	Once a year or more depending on water source

The following table is a summary of indicates that number of samples, water systems collect monthly for bacteria testing based on the population served:

Table 2 – Bacteriological testing requirements

Population Served	Number of samples required monthly
25 – 1,000	1
1,001 – 2,500	2
2,501 – 3,300	3
3,301 – 4,100	4
4,101 – 4,901	5
4, 901 – 3,960, 001	6 – 480

The following table is a list of regulated contaminants that are monitored in both small and large community water systems. Included in the list are typical sources and the potential health effects of each contaminant.

Table 3 – Regulated contaminants

Contaminant	Typical Source of Contaminant	Health Effects Language
Microbiological Contaminants		
Total Coliform Bacteria (Total Coliform Rule)	Naturally present in the environment	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal coliform and E. coli (Total Coliform Rule)	Human and animal fecal waste	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Fecal Indicator (E. coli) (Federal Ground Water)	Human and animal fecal waste	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as

Contaminant	Typical Source of Contaminant	Health Effects Language
Rule)		diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Fecal Indicators (enterococci or coliphage) (Federal Ground Water Rule)	Human and animal fecal waste	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Turbidity	Soil runoff	Turbidity has no health effects. However, high levels of turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Giardia lamblia, viruses, heterotrophic plate count bacteria, Legionella, Cryptosporidium	Naturally present in the environment	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Radioactive Contaminants		
Gross Beta Particle Activity	Decay of natural and man-made deposits	Some people who drink water containing strontium-90 in excess of the MCL over many years may have an increased risk of getting cancer.
Strontium-90	Decay of natural and man-made deposit	Some people who drink water containing strontium-90 in excess of the MCL over many years may have an increased risk of getting cancer.
Tritium	Decay of natural and man-made deposits	Some people who drink water containing tritium in excess of the MCL over many years may have an increased risk of getting cancer.
Gross Alpha Particle Activity	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined Radium 226 & 228	Erosion of natural deposits	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium	Erosion of natural deposits	Some people who drink water containing uranium in excess of the MCL over many years may have kidney problems or an increased risk of getting cancer.
Inorganic Contaminants		
Aluminum	Erosion of natural deposits; residue from some surface water treatment processes	Erosion of natural deposits; residue from some surface water treatment processes
Antimony	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Asbestos	Internal corrosion of asbestos cement water mains; erosion of natural deposits	Internal corrosion of asbestos cement water mains; erosion of natural deposits
Barium	Discharge of oil drilling	Discharge of oil drilling wastes and from metal refineries; erosion

Contaminant	Typical Source of Contaminant	Health Effects Language
	wastes and from metal refineries; erosion of natural deposits	of natural deposits
Beryllium	Discharge from metal refineries, coal-burning factories, and electrical, aerospace, and defense industries	Discharge from metal refineries, coal-burning factories, and electrical, aerospace, and defense industries
Cadmium	Internal corrosion of galvanized pipes; erosion of natural deposits; discharge from electroplating and industrial chemical factories, and metal refineries; runoff from waste batteries and paints	Internal corrosion of galvanized pipes; erosion of natural deposits; discharge from electroplating and industrial chemical factories, and metal refineries; runoff from waste batteries and paints
Chromium	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Fluoride	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the federal MCL of 4 mg/L over many years may get bone disease, including pain and tenderness of the bones. Children who drink water containing fluoride in excess of the state MCL of 2 mg/L may get mottled teeth.
Lead	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits	Infants and children who drink water containing lead in excess of the action level may experience delays in their physical or mental development. Children may show slight deficits in attention span and learning abilities. Adults who drink this water over many years may develop kidney problems or high blood pressure.
Mercury (inorganic)	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and cropland	Some people who drink water containing mercury in excess of the MCL over many years may experience mental disturbances, or impaired physical coordination, speech and hearing.
Nickel	Erosion of natural deposits; discharge from metal factories	Some people who drink water containing nickel in excess of the MCL over many years may experience liver and heart effects.
Nitrate (as nitrate, NO ₃)	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women.
Nitrite (as nitrogen, N)	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits	Infants below the age of six months who drink water containing nitrite in excess of the MCL may quickly become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blueness of the skin.
Perchlorate	Perchlorate is an inorganic chemical used in solid rocket propellant, fireworks, explosives, flares, matches, and a variety of industries. It usually gets into drinking water as a result of environmental contamination from historic aerospace or other	Perchlorate has been shown to interfere with uptake of iodide by the thyroid gland, and to thereby reduce the production of thyroid hormones, leading to adverse affects associated with inadequate hormone levels. Thyroid hormones are needed for normal prenatal growth and development of the fetus, as well as for normal growth and development in the infant and child. In adults, thyroid hormones are needed for normal metabolism and mental function.

Contaminant	Typical Source of Contaminant	Health Effects Language
	industrial operations that used or use, store, or dispose of perchlorate and its salts.	
Selenium	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years may experience hair or fingernail losses, numbness in fingers or toes, or circulation system problems.
Thallium	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	Some people who drink water containing thallium in excess of the MCL over many years may experience hair loss, changes in their blood, or kidney, intestinal, or liver problems.
Synthetic Organic Contaminants including Pesticides and Herbicides	Synthetic Organic Contaminants including Pesticides and Herbicides	Synthetic Organic Contaminants including Pesticides and Herbicides
2,4-D	Runoff from herbicide used on row crops, range land, lawns, and aquatic weeds	Some people who use water containing the weed killer 2,4-D in excess of the MCL over many years may experience kidney, liver, or adrenal gland problems.
2,4,5-TP (Silvex)	Residue of banned herbicide	Some people who drink water containing Silvex in excess of the MCL over many years may experience liver problems.
Acrylamide	Added to water during sewage/wastewater treatment	Some people who drink water containing high levels of acrylamide over a long period of time may experience nervous system or blood problems, and may have an increased risk of getting cancer.
Alachlor	Runoff from herbicide used on row crops	Some people who use water containing alachlor in excess of the MCL over many years may experience eye, liver, kidney, or spleen problems, or experience anemia, and may have an increased risk of getting cancer.
Atrazine	Runoff from herbicide used on row crops and along railroad and highway right-of-ways	Some people who use water containing atrazine in excess of the MCL over many years may experience cardiovascular system problems or reproductive difficulties.
Bentazon	Runoff/leaching from herbicide used on beans, peppers, corn, peanuts, rice, and ornamental grasses	Some people who drink water containing bentazon in excess of the MCL over many year may experience prostate and gastrointestinal effects.
Benzo(a)pyrene (PAH)	Leaching from linings of water storage tanks and distribution mains	Some people who use water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran	Leaching of soil fumigant used on rice and alfalfa, and grape vineyards	Some people who use water containing carbofuran in excess of the MCL over many years may experience problems with their blood, or nervous or reproductive system problems.
Chlordane	Residue of banned insecticide	Some people who use water containing chlordane in excess of the MCL over many years may experience liver or nervous system problems, and may have an increased risk of getting cancer.
Dalapon	Runoff from herbicide used on rights-of-ways, and crops and landscape maintenance	Some people who drink water containing dalapon in excess of the MCL over many years may experience minor kidney changes.
Di(2-ethylhexyl) adipate	Discharge from chemical factories	Some people who drink water containing di(2-ethylhexyl) adipate in excess of the MCL over many years may experience weight loss, liver enlargement, or possible reproductive difficulties.
Di(2-ethylhexyl) phthalate	Discharge from rubber and chemical factories; inert	Some people who use water containing di(2-ethylhexyl) phthalate in excess of the MCL over many years may experience liver

Contaminant	Typical Source of Contaminant	Health Effects Language
	ingredient in pesticides	problems or reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloropropane (DBCP)	Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes, and tree fruit	Some people who use water containing DBCP in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Dinoseb	Runoff from herbicide used on soybeans, vegetables, and fruits	Some people who drink water containing dinoseb in excess of the MCL over many years may experience reproductive difficulties.
Dioxin (2,3,7,8-TCDD)	Emissions from waste incineration and other combustion; discharge from chemical factories	Some people who use water containing dioxin in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Diquat	Runoff from herbicide use for terrestrial and aquatic weeds	Some people who drink water containing diquat in excess of the MCL over many years may get cataracts.
Endothall	Runoff from herbicide use for terrestrial and aquatic weeds; defoliant	Some people who drink water containing endothall in excess of the MCL over many years may experience stomach or intestinal problems.
Endrin	Residue of banned insecticide and rodenticide	Some people who drink water containing endrin in excess of the MCL over many years may experience liver problems.
Epichlorohydrin	Discharge from industrial chemical factories; impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time may experience stomach problems, and may have an increased risk of getting cancer.
Ethylene dibromide (EDB)	Discharge from petroleum refineries; underground gas tank leaks; banned nematocide that may still be present in soils due to runoff and leaching from grain and fruit crops	Some people who use water containing ethylene dibromide in excess of the MCL over many years may experience liver, stomach, reproductive system, or kidney problems, and may have an increased risk of getting cancer.
Glyphosate	Runoff from herbicide use	Some people who drink water containing glyphosate in excess of the MCL over many years may experience kidney problems or reproductive difficulties.
Heptachlor	Residue of banned insecticide	Some people who use water containing heptachlor in excess of the MCL over many years may experience liver damage and may have an increased risk of getting cancer.
Heptachlor epoxide	Breakdown of heptachlor	Some people who use water containing heptachlor epoxide in excess of the MCL over many years may experience liver damage, and may have an increased risk of getting cancer.
Hexachlorobenzene	Discharge from metal refineries and agricultural chemical factories; byproduct of chlorination reactions in wastewater	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years may experience liver or kidney problems, or adverse reproductive effects, and may have an increased risk of getting cancer.
Hexachlorocyclopentadiene	Discharge from chemical factories	Some people who use water containing hexachlorocyclopentadiene in excess of the MCL over many years may experience kidney or stomach problems.
Lindane	Runoff/leaching from insecticide used on cattle, lumber, gardens	Some people who drink water containing lindane in excess of the MCL over many years may experience kidney or liver problems.
Methoxychlor	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Some people who drink water containing methoxychlor in excess of the MCL over many years may experience reproductive difficulties.
Molinate (Ordram)	Runoff/leaching from	Some people who use water containing molinate in excess of the

Contaminant	Typical Source of Contaminant	Health Effects Language
	herbicide used on rice	MCL over many years may experience reproductive effects.
Oxamyl (Vydate)	Runoff/leaching from insecticide used on field crops, fruits and ornamentals, especially apples, potatoes, and tomatoes	Some people who drink water containing oxamyl in excess of the MCL over many years may experience slight nervous system effects.
PCBs (Polychlorinated biphenyls)	Runoff from landfills; discharge of waste chemicals	Some people who drink water containing PCBs in excess of the MCL over many years may experience changes in their skin, thymus gland problems, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
Pentachlorophenol	Discharge from wood preserving factories, cotton and other insecticidal/herbicidal uses	Some people who use water containing pentachlorophenol in excess of the MCL over many years may experience liver or kidney problems, and may have an increased risk of getting cancer.
Picloram	Herbicide runoff	Some people who drink water containing picloram in excess of the MCL over many years may experience liver problems.
Simazine	Herbicide runoff	Some people who use water containing simazine in excess of the MCL over many years may experience blood problems.
Thiobencarb	Runoff/leaching from herbicide used on rice	Some people who use water containing thiobencarb in excess of the MCL over many years may experience body weight and blood effects.
Benzene	Discharge from plastics, dyes and nylon factories; leaching from gas storage tanks and landfills	Some people who use water containing benzene in excess of the MCL over many years may experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Carbon tetrachloride	Discharge from chemical plants and other industrial activities	Some people who use water containing carbon tetrachloride in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.
1,2-Dichlorobenzene	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichlorobenzene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.
1,4-Dichlorobenzene	Discharge from industrial chemical factories	Some people who use water containing 1,4-dichlorobenzene in excess of the MCL over many years may experience anemia, liver, kidney, or spleen damage, or changes in their blood.
1,1-Dichloroethane	Extraction and degreasing solvent; used in the manufacture of pharmaceuticals, stone, clay, and glass products; fumigant	Some people who use water containing 1,1-dichloroethane in excess of the MCL over many years may experience nervous system or respiratory problems.
1,2-Dichloroethane	Discharge from industrial chemical factories	Some people who use water containing 1,2- dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
1,1-Dichloroethylene	Discharge from industrial chemical factories	Some people who use water containing 1,1-dichloroethylene in excess of the MCL over many years may experience liver problems.
cis-1,2-Dichloroethylene	Discharge from industrial chemical factories; major biodegradation byproduct of TCE and PCE groundwater contamination	Some people who use water containing cis-1,2-dichloroethylene in excess of the MCL over many years may experience liver problems.
trans-1,2-Dichloroethylene	Discharge from industrial chemical factories; minor biodegradation byproduct of TCE and PCE groundwater contamination	Some people who drink water containing trans-1,2-dichloroethylene in excess of the MCL over many years may experience liver problems.

Contaminant	Typical Source of Contaminant	Health Effects Language
Dichloromethane	Discharge from pharmaceutical and chemical factories; insecticide	Some people who drink water containing dichloromethane in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.
1,2-Dichloropropane	Discharge from industrial chemical factories; primary component of some fumigants	Some people who use water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
1,3-Dichloropropene	Runoff/leaching from nematocide used on croplands	Some people who use water containing 1,3-dichloropropene in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene	Discharge from petroleum refineries; industrial chemical factories	Some people who use water containing ethylbenzene in excess of the MCL over many years may experience liver or kidney problems.
Methyl-tert-butyl ether	Leaking underground storage tanks; discharges from petroleum and chemical factories	Some people who use water containing methyl-tert-butyl ether in excess of the MCL over many years may have an increased risk of getting cancer.
Monochlorobenzene	Discharge from industrial and agricultural chemical factories and drycleaning facilities	Some people who use water containing monochlorobenzene in excess of the MCL over many years may experience liver or kidney problems.
Styrene	Discharge from rubber and plastic factories; leaching from landfills	Some people who drink water containing styrene in excess of the MCL over many years may experience liver, kidney, or circulatory system problems.
1,1,2,2-Tetrachloroethane	Discharge from industrial and agricultural chemical factories; solvent used in production of TCE, pesticides, varnish and lacquers	Some people who drink water containing 1,1,2,2-tetrachloroethane in excess of the MCL over many years may experience liver or nervous system problems.
Tetrachloroethylene (PCE)	Discharge from factories, dry cleaners, and auto shops (metal degreaser)	Some people who use water containing tetrachloroethylene in excess of the MCL over many years may experience liver problems, and may have an increased risk of getting cancer.
1,2,4-Trichlorobenzene	Discharge from textile-finishing factories	Some people who use water containing 1,2,4-trichlorobenzene in excess of the MCL over many years may experience adrenal gland changes.
1,1,1-Trichloroethane	Discharge from metal degreasing sites and other factories; manufacture of food wrappings	Some people who use water containing 1,1,1-trichloroethane in excess of the MCL over many years may experience liver, nervous system, or circulatory system problems.
1,1,2-Trichloroethane	Discharge from industrial chemical factories	Some people who use water containing 1,1,2-trichloroethane in excess of the MCL over many years may experience liver, kidney, or immune system problems.
1,2-Dichloropropane	Discharge from industrial chemical factories; primary component of some fumigants	Some people who use water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Trichloroethylene (TCE)	Discharge from metal degreasing sites and other factories	Some people who use water containing trichloroethylene in excess of the MCL over many years may experience liver problems and may have an increased risk of getting cancer.
Toluene	Discharge from petroleum and chemical factories; underground gas tank leaks	Some people who use water containing toluene in excess of the MCL over many years may experience nervous system, kidney, or liver problems.
Trichlorofluoromethane	Discharge from industrial factories; degreasing solvent; propellant and refrigerant	Some people who use water containing trichlorofluoromethane in excess of the MCL over many years may experience liver problems.

Contaminant	Typical Source of Contaminant	Health Effects Language
1,1,2-Trichloro-1,2,2-trifluoroethane	Discharge from metal degreasing sites and other factories; drycleaning solvent; refrigerant	Some people who use water containing 1,1,2-trichloro-1,2,2-trifluoroethane in excess of the MCL over many years may experience liver problems.
Vinyl chloride	Leaching from PVC piping; discharge from plastics factories; biodegradation byproduct of TCE and PCE groundwater contamination	Some people who use water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes	Discharge from petroleum and chemical factories; fuel solvent	Some people who use water containing xylenes in excess of the MCL over many years may experience nervous system damage.
Disinfection Byproducts, Disinfectant Residuals and Disinfection Byproduct Precursors		
THMs (Total Trihalomethanes)	By-product of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience liver, kidney, or central nervous system problems, and may have an increased risk of getting cancer.
Haloacetic Acids	Byproduct of drinking water disinfection	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Bromate	Byproduct of drinking water disinfection	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Chloramines	Drinking water disinfectant added for treatment	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine	Drinking water disinfectant added for treatment	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorite	Byproduct of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chlorine Dioxide	Drinking water disinfectant added for treatment	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Control of DBP precursors (TOC)	Various natural and man-made sources	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of cancer.

D. Water Emergency Notifications

Water systems routinely conduct chemical, bacteriological and radiological testing of the water being delivered. The number of bacterial samples is dependent on the size of the water system. Smaller systems may be conduct sampling every quarter while larger

municipal water systems may conduct at least 50 samples each month. Bacteriological samples are tested for both coliforms and E. Coli or fecal coliforms.

The presence of coliforms in the water system is an indicator of contamination in the system. Coliform bacteria make up a large group of bacteria that are found in soils, on plants, and in surface water. Fecal coliform bacteria live in the intestines of humans and warm blooded animals. Coliforms are not harmful themselves, but when present in drinking water, it may be an indicator of disease-causing microorganisms such as bacteria, viruses, and parasites may have gotten into the water supply by the same route as the coliforms.

When a water system determines that the water has been impaired by bacteriological or other contamination, it may issue “Boil Water Orders” or “Do Not Use” notices to all the affected users. When this occurs, impacts to wholesale food facilities particularly those that use water in their processes can be significant.

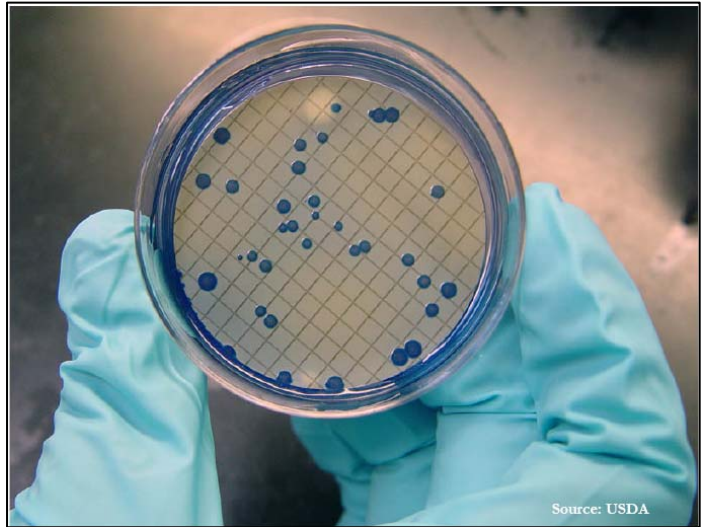


Photo 2 – Fecal coliform

Figure 6 – Sample Boil Water Order

Date: May 12, 2011

BOIL WATER NOTICE

BOIL YOUR WATER BEFORE USING

Failure to follow this advisory could result in stomach or intestinal illness.

Due to the recent **MAJOR EARTHQUAKE and the prolonged loss of water pressure in the water system**, the California Department of Public Health in conjunction with the Los Angeles County Health Department, and **ABC Water System** are advising residents of Los Angeles to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, **let it boil for one (1) minute**, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation **until further notice**. Boiling kills bacteria and other organisms in the water.

- An alternative method of disinfection for residents that are not able to boil their water is to use fresh, unscented, liquid household bleach. To do so, add 8 drops (or 1/8 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/4 teaspoon) per gallon of cloudy water, mix thoroughly, and allow it to stand for 30 minutes before using. A chlorine-like taste and odor will result from this disinfection procedure and is an indication that adequate disinfection has taken place.
- Water disinfection tablets may also be used by following the manufacturer's instructions.
- Potable water is available at the following locations: Dodger Stadium
Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that water is safe to drink and you no longer need to boil your water. We anticipate resolving the problem within 24 hours.

For more information call: John Doe. (888) 888-8888

Water Utility contact: John Doe

California Department of Public Health – Drinking Water Field Operations Branch- District Office at [(444) 444-4444].

Local Environmental Health Jurisdiction: Los Angeles County at (555) 555-5555].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

The following table is a summary of potential emergency notifications that you may receive from your water companies and the recommended responses:

Table 4 – Recommended food facility response Tier I notices

Notification Type	Possible Causes or Reasons	Recommended Food Facility Response
Tier I - High potential for immediate adverse health effects		
Boil Water Order	<ul style="list-style-type: none"> • The presence of fecal coliform in the system has been confirmed • Unsafe levels of turbidity • Waterborne disease outbreak • Interruption in the water treatment operations – no chlorination • A natural disaster that disrupted the water supply treatment and distribution • System pressure loss of less than 5 psi • Dead animals observed in a distribution reservoir or in wells • Flooding of wells • Microbiological cross contamination • Intentional contamination 	<ul style="list-style-type: none"> • Immediately discontinue food processing activities particularly those that require the use of water in products and sanitation • Do not drink tap water – Drink bottled water only • Conduct assessment of processed food and consider voluntary recalls as necessary • Consult with your local health officer / food safety inspector • Discontinue use of ice makers • Shutdown and secure all drinking water fountains • Post warning signs on all fixtures where people may drink or use • Shutdown all water connected fixtures and equipment
Do Not Drink Your Water	<ul style="list-style-type: none"> • Acute contamination that cannot be rendered safe by boiling or disinfection • Unsafe levels of chlorine dioxide in the water system • Unsafe levels of Nitrates • Unsafe levels of Perchlorate in the water system 	<ul style="list-style-type: none"> • Record keeping
Do Not Use Your Water	<ul style="list-style-type: none"> • Water has an unknown contaminant or the use of water can adversely impact public health • Credible terrorist threat confirmed by local response agencies 	<ul style="list-style-type: none"> • Immediately discontinue use of water in the facility • Do not drink and avoid skin contact with water • Do not use water on food processing or any sanitation activities • Immediately shut-off all water connected equipment • Shutdown and post signs to all water fixtures • Use bottled water only for drinking and washing hands

Notification Type	Possible Causes or Reasons	Recommended Food Facility Response
		<ul style="list-style-type: none"> • Monitor notification from your water company • Conduct assessment of processed food and consider voluntary recalls as necessary
<p align="center">Boil Water Cancellation Notice or Problem Corrected</p>	<ul style="list-style-type: none"> • Water systems violations corrected • Testing results reveal water system now in compliance 	<ul style="list-style-type: none"> • Flush the facility water system • Record keeping
Tier II - Water Systems Violations		
<p>These notices will usually appear with your water bills. They are usually violations that are not acute threats to public health and have been corrected</p>	<ul style="list-style-type: none"> • Arsenic MCL exceeded • Chemical or radiological exceeded • Fluoride MCL exceeded • Groundwater rule failure • Lead and copper monitoring failure • Disinfection rule violations • Surface treatment rule violation • Total coliform bacteria – unresolved 	<ul style="list-style-type: none"> • Record keeping
Tier III - Water Systems Violations		
<p>These notices will appear in the annual water quality reports</p>	<ul style="list-style-type: none"> • Monitoring violations are minimal threats to public health and have been resolved 	<ul style="list-style-type: none"> • Record Keeping

When Tier I notices are issued it is likely that the local health department may be conduct inspections of the affected facilities to assure that safe food management conditions of “Boil Water “ notices are met.

III. Reclaimed Water or Recycled Water

Recycled water or reclaimed water is increasingly becoming an alternate source of water for many industries. Recycled water is a product of wastewater or sewage that is carefully processed, treated, disinfected and distributed for various limited uses which include the irrigation of certain food crops. Recycled water is increasing being used in many buildings as an alternate water source for plumbing fixtures such as toilets, urinals and as an industrial coolant. Wholesale food facilities especially food processors must carefully consider the critical factors indicated in this section especially when they use reclaimed water within their facilities or when they obtain materials from facilities that use reclaimed water.



Photo 4- Reclaimed water warning sign

Reclaimed water or recycled water refers to treated water that is generated from wastewater treatment or reclamation plants. Wastewater undergoes a three stage treatment process which generates water that is very close to drinking water quality. Tertiary treated recycled water is colorless, odorless and when disinfected, is discharged into the streams, rivers and oceans. In California, it is not allowed for direct human consumption at this time.



Photo 3- Reclaimed water warning sign

The three wastewater or stages of wastewater treatment include the following:

Table 5- Reclaimed water treatment

Primary treatment	This process removes 70 – 85 percent of the organic and inorganic solids where the lighter materials float to the top while the heavier materials called “sludge: remain in the bottom. Sludge is later collected for spreading or disposal.
Secondary Treatment	Water from the primary treatment moves to the secondary treatment process where oxygen is added to allow microorganisms to convert suspended waste solids to biomass that ultimately settles down for collection. In some instances secondary treated wastewater are disinfected and distributed for use such as irrigation.
Tertiary Treatment	This process filters out the remaining solids through a granular filter media (such as sand or anthracite coal) or a membrane. The resulting filtrate is then disinfected by chlorine, ultraviolet light and other approved disinfection methods.

There are eleven wastewater treatment facilities in Los Angeles County that treat an estimated 500 million gallons per day (MGD) of which 200 MGD of reclaimed water are available for approved re-use in Southern California. Water distributed as reclaimed water for various uses is exclusively tertiary treated and disinfected.

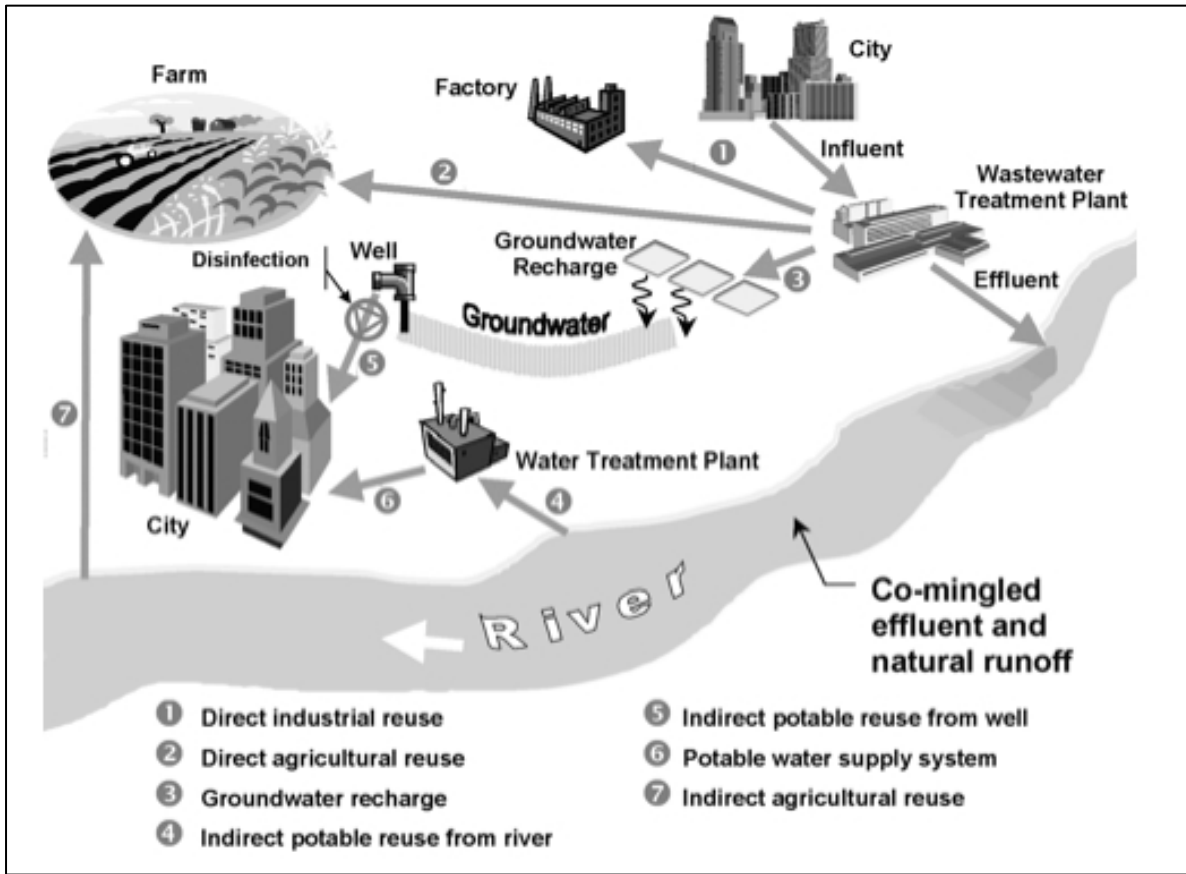


Figure 7 – Reclaimed water hydrologic cycle

The following are current approved uses of reclaimed water in California:

Table 8 – Approved reclaimed water use

Irrigation	Food crops School yards Golf courses Freeway landscaping Pasture for milk animals Vineyards	Parks and playground Residential landscaping Cemeteries Ornamental nurseries Orchards Fodder and fiber crops
Supply for impoundments	Recreational impoundments Landscaping impoundments	
Cooling and air conditioning	Industrial cooling towers and evaporative condensers Commercial cooling towers and evaporative condensers	
Other uses	Groundwater discharge Priming drain traps Industrial boiler feed Decorative fountains Artificial snow making Soil compaction Cleaning roads / sidewalks	Flushing toilets and urinals Industrial processing Fire fighting Commercial laundries Commercial car washes Mixing concrete Flushing sanitary sewers

The possible health hazards associated with reclaimed water entering the potable water system include the following:

- The presence of enteric pathogens such as Cryptosporidium that can survive the wastewater treatment process such as Cryptosporidium entering into the water system.
- The presence of pharmaceutical chemicals that are not treated by the treatment process entering in the water system
- Tertiary disinfected reclaimed water does not meet potable drinking water standards and treatment requirements
- Contamination of potable water supplies include potential to increase waterborne disease to communities
- Contamination of potable water during food processing
- The presence of pharmaceuticals and other endocrine disruptors
- Cross connections into the main water supply



Photo 5- Reclaimed water toilet flushing sign

It is important to note that with the current critical water shortages, the use of reclaimed water is becoming more prevalent and the potential of cross connections between potable and reclaimed water is also increasing. A cross connection is defined as actual or potential connections between a potable and non-potable water supply, constitute a serious public health hazard. The use of reclaimed water inside building is allowed but must meet certain conditions and approvals from several agencies.

The following are requirements of facilities that intend to utilize reclaimed water:

- Approval from the local Sanitation Districts
- Approved engineering reports
- Plan permits and approvals
- Pre and post construction inspection approvals
- Backflow prevention devices at approved locations
- Updated building (plumbing) plans and specifications
- Cross connection surveys including and periodic shut down tests conducted by qualified individuals
- Emergency Cross Connection Control plan
- Operations manual
- Trained Site Supervisor
- Trained reclaimed water Site Supervisor

The following are general practices in facilities that utilize reclaimed water:

- Training of all personnel in the safe use and restrictions of reclaimed water
- Install and maintain signs at all points of entry in the facility
- Labeling of all recycled water and potable water piping and fixtures
- Use of quick couplers instead of hose bibs
- Irrigation during times that provide minimum contact (overspray) with personnel or the public

- Quickly repair any reclaimed water piping or system breaks
- Provide separate tools for reclaimed water and potable water repairs
- Schedule routine backflow prevention testing and cross connection testing
- Obtain approval from the local environmental health office for any piping or equipment changes in the facility
- Keeps all drawings and plans relative to potable water and reclaimed water updated and accessible

The use and installation of reclaimed water in many facilities are typically overseen by the California Department of Public Health and the local health department.

IV. Wastewater

The disposition of wastewater from food facility activities are also regulated by Publically Operated Treatment Works such as sanitation districts and may require the installation of addition wastewater related equipment or structures such as a clarifier and grease interceptors. Additionally, facilities that generate significant amounts of wastewater may be required to obtain a wastewater discharge permit with the appropriate sanitation agencies.

There are two general types of wastewater generated from food facilities. Sanitary wastewater or sewage is human-related liquid waste. This type of wastewater includes wastewater generated from people using toilets, hand wash sinks, and kitchen sinks, and drinking fountains. The second type of wastewater generated from food facilities is often called industrial waste. This wastewater category can include wastewater generated from food processing and sanitation activities, commercial and industrial operations.



Photo 6 – Lancaster sewage treatment plant with treated effluent discharge to Piute Ponds

A. Municipal Wastewater – Public Sewers

In urbanized areas sewage or wastewater is typically discharged into a municipal sewer system that includes sewer lines a wastewater treatment plant. In the absence of a public sewer system, domestic wastewater may be discharge into an onsite wastewater treatment systems (septic systems).

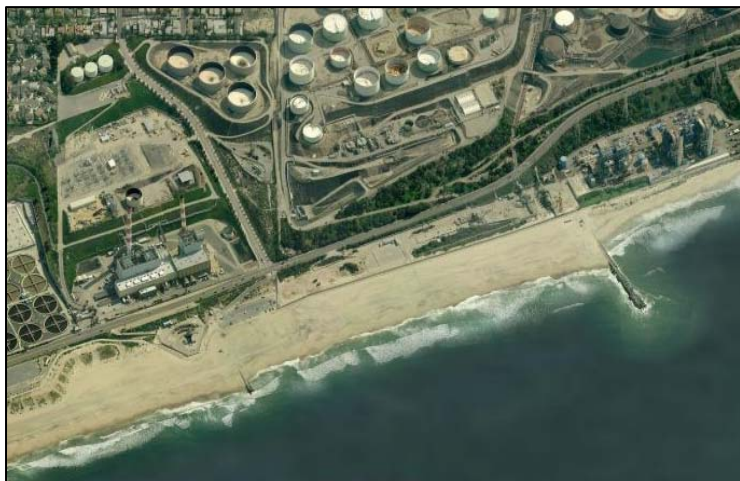


Figure 7 – Hyperion sewage treatment plant with treated effluent discharge to the ocean

The public sewer and wastewater infrastructure is managed by sanitation districts. In Los Angeles County, sewage and wastewater are managed by two major sanitation districts, the City of Los Angeles Sanitation District and Los Angeles County Sanitation Districts. The Los Angeles County Sanitation Districts serve most of the individual incorporated cities that do not have their individual sewer maintenance agencies.

The Districts currently own and operate eleven wastewater treatment plants which handle over 500 million gallons per day (mgd) of wastewater. Treated effluents from these facilities are either discharged to the ocean, surface waters or land, or are reused for applications such

as landscape irrigation, groundwater recharge, and industrial processing. In addition to the treatment plants, the Districts operate and maintain over 1,200 miles of trunk sewers and 50 pumping plants for conveyance of wastewater.

The [Wastewater Ordinance](#) requires any business that discharges industrial wastewater to the Districts' sewerage system to first obtain an Industrial Wastewater Discharge Permit. Discharge permit holders are then subject to permitting, inspections and surcharges relative to the amount and strengths of their respective industrial wastes. The permit program provides a means for the Districts to protect sewerage facilities and personnel, the public, and the environment through the regulation of industrial wastewater dischargers.

Generally, wholesale food warehouses are exempted from the above permitting requirement. Small food processing facilities are also exempted if they discharge less than 500 gallons per day and their wastes do not include excessive oil and grease, excessive dissolved sulfides or high-strength waste.

All industrial waste dischargers are prohibited from discharging the following wastes into the sewers:

- Wastewater with a pH of less than 6.0
- Wastewater with a temperature of greater than 140F
- Wastewater with a dissolved sulfide concentration of 0.1 mg/dl at any time
- Any hazardous materials or wastes
- Rainwater, groundwater from wells, and roof drainage
- Flammable substances or chemicals that can create hazardous conditions inside the sewer lines and treatment plant

Additional prohibited wastes are indicated in the Wastewater Ordinance.

In many instances, the Sanitation Districts will require the installation of pre-treatment of industrial waste to reduce concentrations of constituents of concern in the wastewater prior to entering the public sewers. These pretreatment systems may include, grease interceptors, equalizations tanks, neutralization chambers or systems, and spill containments systems. Relative to wholesale food facilities and when these pretreatment systems are required by the Sanitation Districts, the following are considerations and important factors to consider:

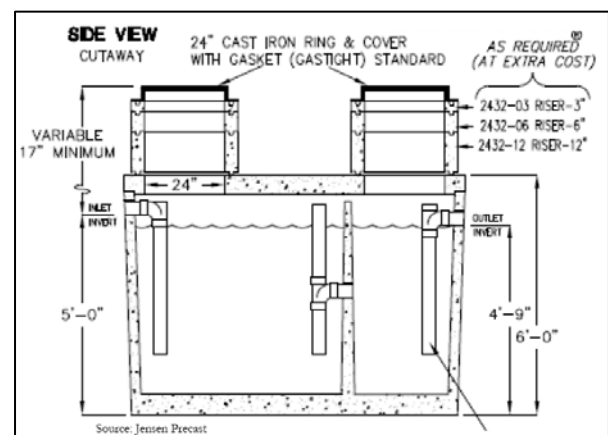


Figure 8 – Grease interceptor

- Grease interceptors and grease traps must be located outside food processing and storage rooms
- Domestic or human related waste must not be allowed to discharged into pretreatment systems
- The location of the grease interceptors must be located as far as reasonable from delivery doors.
- Grease interceptors must be located as far as reasonable from facility storm drain systems

The location of manholes must be accessible and not conducive to spills that may affect food items (delivery and staging areas)

- Rainwater and storm water drainage must not enter the systems –watertight manholes
- Wastewater neutralization chemicals must be stored outside of the processing and storage rooms
- Small packaged wastewater treatment plants must be located away from the food processing buildings and must be provided with adequate containment to eliminate any accidental spills into the storm drain systems or affect food items
- Develop a maintenance program for the pretreatment systems that include regular inspections, the use of a licensed wastewater pumper trucks and a spill prevention and response plan
- Record keeping

B. Onsite Wastewater Treatment Systems – Septic Systems

Where public sewers are not available, wastewater is discharged directly into the ground through an onsite wastewater treatment system (OWTS). In most jurisdictions, the approvals of these systems are overseen by the local health departments. In California, the installation of any commercial or industrial OWTS, require a Waste Discharge Permit with the local Regional Water Quality Control Board (RWQCB). Depending on the location of the facility, the depth to groundwater, the potential impacts to the regional water supply, type of discharges and the amount of wastewater discharged into the ground, RWQCB may require the discharger to conduct the following:

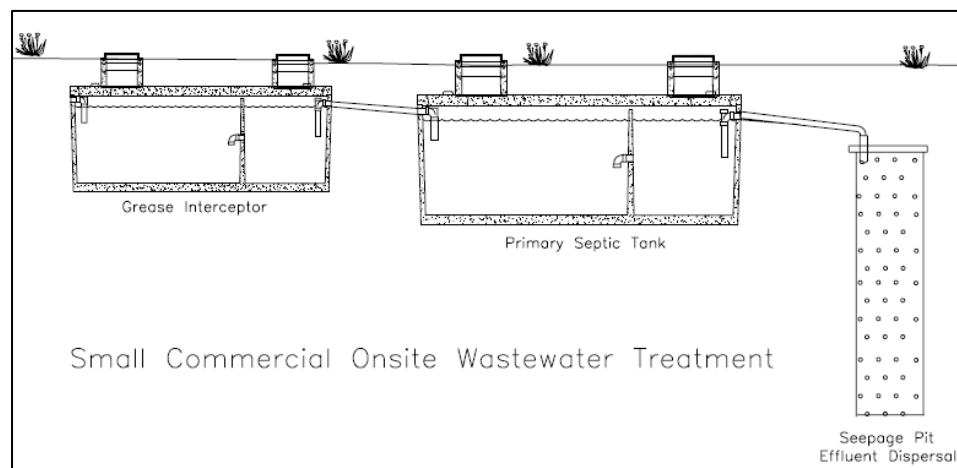


Figure 9 – Small commercial onsite wastewater treatment system

- Obtain a Waste Discharge Permit with the local Regional Water Quality Control Board and comply with the permit requirements
- Install an advanced OWTS pretreatment system with disinfection
- Install groundwater monitoring wells and conduct quarterly groundwater analysis
- Submit quarterly and annual reports to RWQCB
- Maintain records

Where public sewers are available or within 200 feet of the facility, the installation of an OWTS is prohibited. Local jurisdictions may also prohibit the installation of commercial or industrial OWTS

V. Cross Connections and Water Pollution Prevention

Under the Safe Drinking Water Act, water delivered to your facility is potable and shall be protected from contamination at all times. Some of the more serious threats to potable water that is distributed throughout the community are cross connections to potentially contaminating activities or equipment. A cross connection is defined as an actual or potential connection between a potable and non-potable water supplies and constitutes a serious public health hazard. Water from non-potable contamination sources or uses may enter the potable water supply or lines by back siphonage or from back pressure. Well documented cross connections incidents have been responsible for the spread of disease, poisoning and acute injuries.

To control or mitigate cross connections in any facility, backflow prevention devices or assemblies are installed in the appropriate locations. Backflow prevention device or assemblies are both mechanical and non-mechanical plumbing equipment designed to prevent backsiphonage and backpressure and installed in the plumbing lines.

Backflow prevention devices or assemblies shall be installed with the appropriate plumbing permit. The backflow prevention devices may be installed at the point of use or near the potential cross connection or centrally where they serve as protection for multiple equipment or operations.

A. Typical Wholesale Food Facility Plumbing Layout and Recommended Locations of Backflow Devices

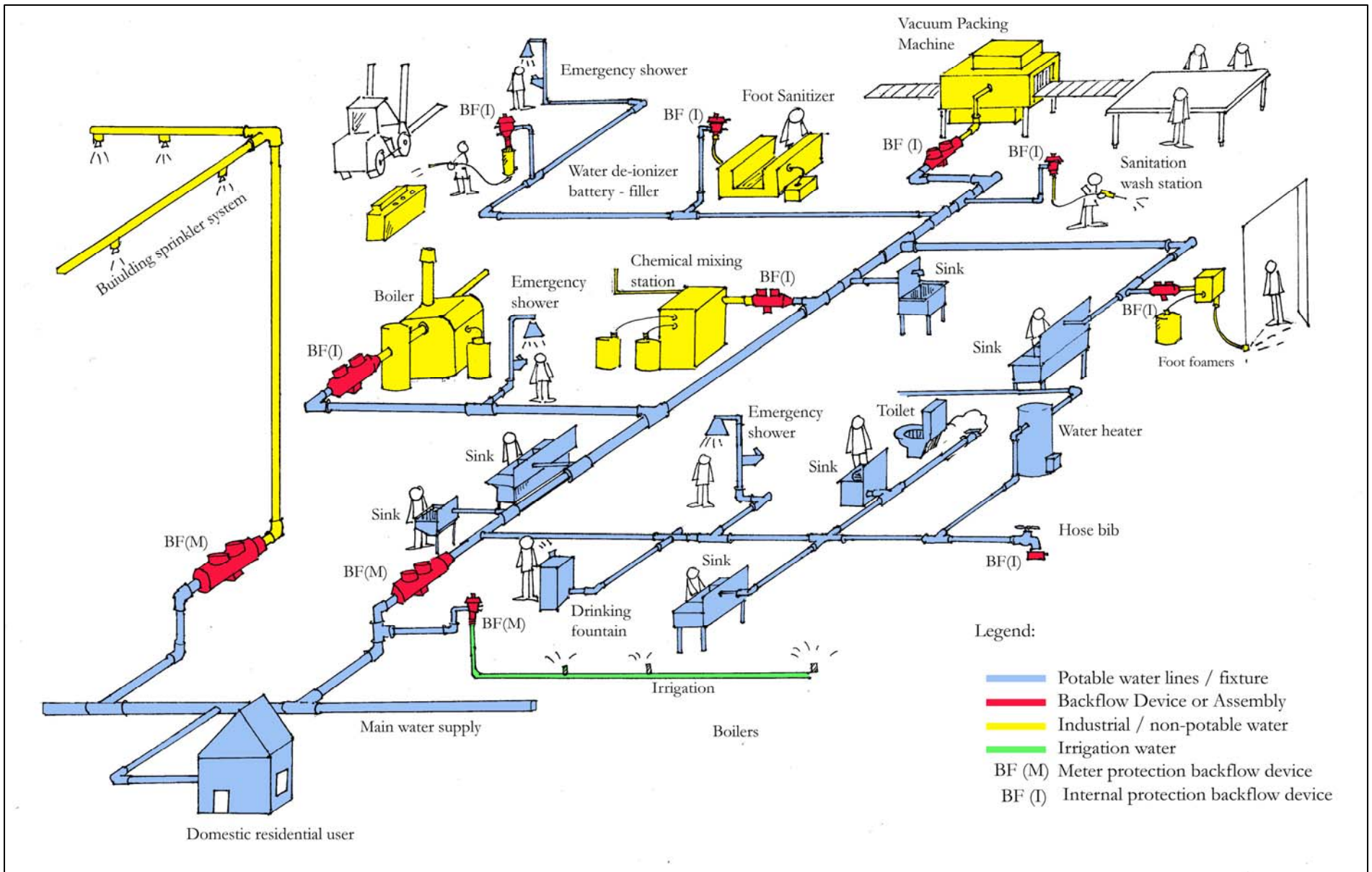


Figure 10 – Typical wholesale food facility plumbing layout and recommended areas for backflow device installation

Relative to potential cross connections in wholesale food facilities, there are three general types of protection should be considered when installing backflow prevention devices:

- Meter Protection
- Internal Protection
- Product Protection

B. Meter Protection

Backflow prevention devices installed for this purpose, are aimed in protecting the main or community water supply from potentially contaminating activities or equipment in a facility. These devices or assemblies are often installed close to the street and water meters. Many jurisdictions are now requiring the installation of meter protective backflow preventers in new construction regardless of the proposed activities or equipment in the building. More importantly, devices installed for this purpose are significant in protecting community health as any potential contaminant from certain facility operations and equipment is isolated in the facility.

The following activities or conditions may require the installation of meter protection devices at wholesale food facilities:

- The presence and use of hazardous materials such as pressurized sanitation systems with an automatically infused chemicals
- The use of an alternate water supplies, such as a private water well, in the facility
- The use of reclaimed or recycled water for any reason in the facility
- The installation of a wastewater treatment plant in the facility
- Other conditions that are deemed as a significant potential threat by the water supplier or local health department
- Fire service main lines for sprinkler systems

C. Internal Protection

Backflow prevention devices or assemblies installed for this purpose are intended to protect the potable water inside the facility. Typically, these are devices that may be in addition to and are located after or downstream of a meter protection backflow device or assembly. More importantly, internal protection protects the potable water that is used by onsite personnel such as the drinking fountains, the hand wash sinks, and emergency eyewash stations. The Uniform Plumbing Code prohibits the installation of any water –operated and dependent equipment that can potentially contaminated the potable water in the facility without obtaining the appropriate plumbing permit and the installation of a protective backflow prevention device or assembly.

In many jurisdictions the oversight of internal protection requirements is overseen by the local environmental health department and plumbing department. However, some jurisdictions may not have a dedicated program for this function. Local plumbing departments will sometime assess the need for internal protection but frequently only whenever an equipment supplier installs a water-dependent equipment under permit.

There are numerous water operated equipment and fixtures that are potential cross contamination sources in wholesale food facilities. These may include:

- Boilers
- Automated Foot Foaming Units
- Centralized chemical sanitation systems
- Ozonators
- Battery water makeup deionizers
- Automated hand washing units
- Pressure washers
- Hose bibs
- Sanitation wash stations
- Dishwashers
- Vacuum packing machines
- Pump primers

D. Product Protection

This type of protection relates mainly to food processors or industries that manufacture products with a significant water contact or content. In some facilities, operators may have properly separated potable water from industrial or process use water. In the same facilities, the process or industrial water may be used as an additive to food or other water based products. To reduce the chances of products from being contaminated, it may be necessary to install additional backflow prevention devices with in the dedicated process or industrial water line to assure that water that is used on or in the products is free of contamination.

E. Cross Connection Survey and Assessment

A cross connection survey is used method used to determine if the existing internal protection is adequate and if backflow prevention devices or assemblies are required. In general, a survey consists of following the path of the water flow in the facility and determine if the facility operations or any attached equipment are potential contamination sources. Backflow prevention devices are then installed in the appropriate areas to assure the potential contaminating sources are adequately separated from potable or safe water.

The survey must be properly documented and should include a detailed map of the potable water lines and industrial or process water lines. This map should then be consulted every time a water using equipment is installed and updated whenever new water lines are added.

F. Backflow Prevention Devices

Backflow prevention devices or assemblies are the most important component of preventing cross connections to potable water. The location and the degree of hazard to potable water are the two determining factors in the installation of the backflow prevention devices or assemblies. Backflow prevention devices should be installed in the appropriate locations to assure that effective protections are achieved.

Many of the backflow prevention devices or assemblies are mechanical and subject to periodic failures. Some jurisdictions require annual testing of some of the mechanical backflow prevention devices by certified backflow device testers. Some of the devices when installed correctly do not need be tested but must replaced periodically to assure that adequate protection is provided. The testing of the backflow devices is often mandated by the

administering agency such as the water purveyor or the local environmental health department.

There are six generally recognized backflow prevention devices or assemblies used in protecting the potable water: These include:

1. Air Gaps

Air gaps are common non-mechanical backflow preventers that consist of providing an actual gap between the end of the potable water supply line and the receiving reservoir or equipment. Air gaps are also the most protective backflow prevention method. The height of the air gap must be at least twice the diameter of the incoming water supply line.

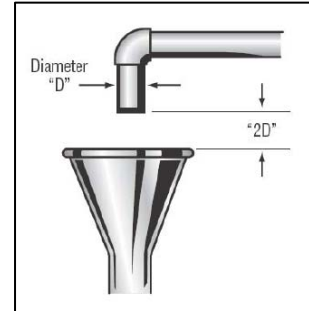


Figure 11 – Air gap

2. Atmospheric Vacuum Breakers (AVB)

These are simple mechanical devices that provide excellent protection against back siphonage only. These devices are not to be used against backpressure as they may easily provide a false sense of protection. However, there are limitations to the use of this type of device. The following are conditions and limitations with the use of this type of device:

- Not effective against backpressure
- There should not be any shut off valves downstream of the device
- The device should be installed at least six inches above the highest outlet or usage
- These devices are not testable and their effectiveness over time is suspect



Figure 11 – Atmospheric Vacuum Breaker

Common atmospheric vacuum breakers include the following:

3. Pressure Vacuum Breakers (PVB) and Spill Prevention Vacuum Beakers

This device is a slightly higher level of protection similar to atmospheric vacuum breakers but can be used with a shutoff valve downstream of the device, under constant pressure and is testable. PVBs have a tendency to spill water and should be installed in areas where unsafe conditions such as food contamination, ponding or slip hazards can occur.

Spill Prevention Vacuum Breakers are similar to PVBs except for the potential of discharging water with backflow conditions occur. Similar to AVB, these PVBs and SPVBs have limitations and installation conditions.

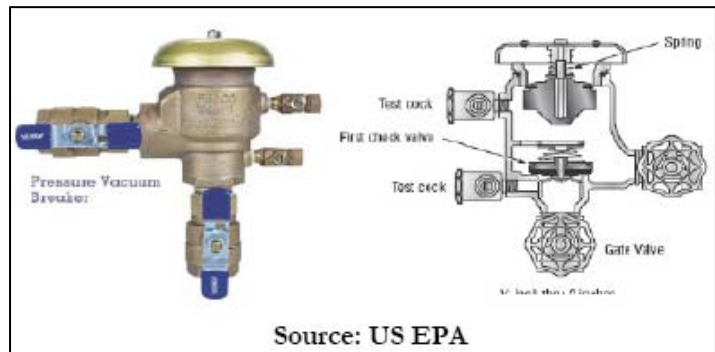


Figure 12 – Pressure Vacuum Breaker

These can include the following:

- Not effective against backpressure
- There should not be any shut off valves downstream of the device
- The device should be installed at least twelve inches above the highest outlet or usage
- As a function of this unit, water can be discharged potentially creating unsafe conditions, both in food production operations, or as slip hazards.

4. Double Check Valves (DC)

These devices are comprised of two integral check valves in the assembly and are testable. These units can be used in backsiphonage and backpressure conditions. However, these units cannot be used to protect potable water from hazardous materials or health hazards. These devices are often seen in the fire service lines:

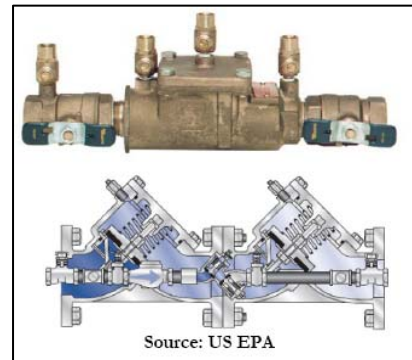


Figure 13– Double Check Valve

5. Reduced Pressure Principle Backflow Preventer (RP)

This is the most protective mechanical backflow preventer and can be used in most applications and hazards. These units are also testable and have no limitations to the installation location relative to the highest point of use, backpressure and backsiphonage. Many water purveyors require the installation of this device as “meter protection” to assure that the public water supply is protected from any hazards”

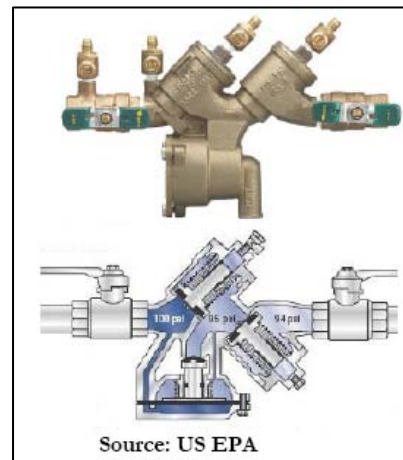


Figure 14 – RP – Reduced pressure principle device

6. Common Wholesale Food Facility Equipment and Backflow Devices

Approved backflow protection shall be provided for all faucets, hose bibs, wash down stations and industrial water use sites. Backflow devices are required when food or sanitation equipment are connected directly to a water supply line that concurrently supplies water to other sinks in the plant. Please see Attachment III for general cross connection principles.

The following are the suggested backflow device type for typical uses and equipment found in food processing facilities:

Table 7 – Food facility equipment that require backflow devices

Equipment or water use	Recommended devices
All hose bibs	Atmospheric Vacuum Breaker
Wash down faucets with fixed hose and spray nozzles	Pressure vacuum breaker
Wash down faucets without fixed hose connection	Atmospheric Vacuum Breaker
Assorted food processing equipment such as vacuum packing unit and product rinsing units	Atmospheric Vacuum Breaker or Pressure Vacuum Breaker
Boilers	Reduced Pressure Principle Device
Foot Sanitizer Dispensers	Pressure Vacuum Breakers
In line chemical dispensing units	Pressure Vacuum Breaker Or Reduced Pressure Principle Device
Ozonators	Reduced Pressure Principle Device

** Please note the numerous pieces of equipment having built in backflow devices. These units must be evaluated by health department prior to determining if the built in device is adequate.

Figure 15 – Common wholesale food facility backflow conditions



Pressure washer



Foot foamer mixing unit



Chemical mixing station



Ozonator



Centralized sanitation system



Chemical mixing valve



Vacuum packing machine



Water de-ionizer – battery filling

VI. Stormwater Protection

Under California’s stormwater program, ALL wholesale food facilities such as warehouses and food processors are subject to stormwater inspections and may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. All wholesale food facilities are also required to implement stormwater Best Management Practices (BMP) regardless of whether they discharge to a municipal separate storm sewer system or directly to waters of the United States. Storm water compliance relates to activities within the facilities that may impact, pollute or contaminate the rain water that flows through your facility and into the municipal storm drain system or directly into a regulated body of water such as rivers, streams or oceans. Additionally, storm water compliance requires facilities to eliminate all “illicit discharges” into the storms such as wastewater from truck washing, leaking trash bins, compressor oily water discharge, facility sanitation wash downs and other liquids.

Under California’s stormwater program, the following are discharges that are allowed to flow onto the storm drain system:

- Anything permitted by the State Water Resources Control Board.
- Landscape irrigation overflows
- Potable drinking water supply and distribution system discharges
- Drains for foundations
- Air conditioning condensate.
- Non-commercial car washing by residents or by non-profit organizations
- Sidewalk rinsing
- Emergency firefighting water
- Water from sprinkler system testing

The following are common “illicit discharges” from wholesale food facilities:

- Leaking trash bins and containers
- Uncontained wash downs from dock areas
- Leaks from bulk storage tanks
- Unfiltered ventilation discharges grease and dust
- Oily discharges from air compressors
- Wash down wastewater from trucks
- Wash down wastewater from equipment
- Leaking or overflowing clarifiers or grease interceptors
- Sewage overflows or leaks from product lines
- Leaking hazardous materials and waste storage areas

A. Notice of Intent – Waste Discharge Permits

In California the State Water Resources Control Board (SWRCB) requires ALL regulated facilities to submit an appropriate document to certify their stormwater permit status. For instance, facilities that have outside activities or storage such as excess equipment and materials are required to submit a “Notice of Intent” to the SWRCB. This procedure notifies the SWRCB that you have outdoor exposures to stormwater and you agree to comply with the General Industrial Activity Stormwater Permit (GIASP) requirements. All facilities that have a Waste Discharge Identification Number with SWRCB are required to conduct the

following:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)
- Eliminate all existing illicit discharges
- Conduct an assessment of your facility relative to storm water runoff exposures
- Control incidental operational spills such as the loading of flour into silos and liquid discharges from trash containers
- Control the discharges of dust from processing activities inside the building
- Provide permanent or temporary covers to equipment and materials that are permanently stored outside
- Maintain all exterior areas
- Conduct Quarterly periodic non-stormwater and stormwater visual observations
- Conduct periodic storm water run-off samples (as indicated in the SWPPP plan)
- Submit Annual Reports to the SWRCB through their online stormwater multiple application and report tracking system (SMARTS)
- Conduct training to applicable maintenance staff

GIASP permit holders are also subject to routine inspections from the SWRCB and its agents.

Common exterior storm water exposures that may trigger the requirements for a GIASP or are violations of the GIASP requirements:



Photo 8 – Food processor with outdoor stormwater exposures – Notice of Intent required

B. Notice of Non-Applicability – No Stormwater Exposures

If a facility is relatively free of outdoor stored equipment, materials, and industrial operations, they are still required to submit a “Notice of Non-Applicability“ to the local Regional Water Quality Control Board (RWQCB). This indicates to the local RWQCB that the facility does not have outdoor exposures that can impact storm water quality and that the facility does not require a permit.

Whether a GIASP is obtained or whether the facility does not have any stormwater exposures, the RWQCB still requires all regulated facilities to comply with established best management practices. Best management practices are activities or devices that reduce pollutants associated with your facility’s operations in the stormwater runoff.

The common best management practices in wholesale food facilities include the following:

- Eliminate all existing and potential illicit discharges
- Clean and maintain all exterior areas using methods that do not generate wastewater such as sweeping
- Clean and maintain all area storm drain sumps
- Eliminate as much as possible the use of outdoor hose bibs or post signs advising users that improper use may create stormwater pollution
- Provide accessible spill prevention control measures such as absorbent and cleaning materials
- Keep all trash containers closed at all times.
- Trash containers must be leak proof
- Control soil erosion from your facilities
- Do not wash vehicles in the parking lot without capturing and properly disposing the resultant wastewater
- Do not allow wash down from dock areas to flow outside or into the storm drains
- Control incidental spills for loading and unloading areas (silos, tanks, clarifiers)
- Assess ventilation discharges – around exhaust fans on the roof vent hood systems)
- Utilize dry cleaning of outdoors areas as much as possible
- Store materials on impervious surfaces or containment berms
- Provide secondary containment to all hazardous materials and hazardous wastes



Photo 9 – Food processor with no outdoor stormwater exposures – Notice of Non-applicability

VII. Hazardous Materials and the Community Right to Know

The basic requirements of the California Community Right-to-know Hazardous Materials Law apply to ANY facility that handles any hazardous materials in amounts that exceed the applicable reporting thresholds. A hazardous material is defined as is any material, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or threatened hazard to human health and safety or to the environment if released into the workplace or the environment.” These materials may be present in different forms such as liquids, solids, dusts, vapors, fumes, mists, and gases. Hazardous materials can also include hazardous wastes and chemical containing products).

The main requirements of the above law include:

- Determining if your facility stores and handles hazardous materials
- Immediate reporting of releases or potential releases of hazardous materials
- Submission of a Hazardous Materials Business Plan (HMBP) and inventory to the local administering agency
- Notification to the local administering agency of the storage and handling of acutely hazardous materials.

In California, the enforcement of the hazardous materials laws falls under the six programs listed below:

Table 8 – Hazardous materials programs and oversight

Hazardous Materials Program	State Regulatory Oversight
Hazardous Materials Inventory and Business Plan	California Emergency Management Agency (CalEMA)
California Accidental Release Prevention (CalARP)	California Emergency Management Agency
Hazardous Waste Generator	Department of Toxic Substances Control (DTSC)
Onsite Hazardous Waste Treatment (Tiered Permitting) Programs	California Emergency Management Agency (CalEMA)
Underground Storage Tanks (UST) Program	Regional Water Quality Control Board (RWQCB)
Aboveground Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC) Program	Regional Water Quality Control Board (RWQCB)

Many if not all of the regulatory functions of the above departments have been delegated to local administering agencies under the Certified Unified Program Agency (CUPA) Program. The CUPA Program is overseen by the California Environmental Protection Agency and certifies local jurisdictions, such as health and fire departments, to administer some or all of the above programs.

Wholesale food facilities often store and handle large volumes of hazardous materials such as lubricating oils, sanitizers, and compressed gases. Some of the typical hazardous materials that may be found in wholesale food facilities include:

- Propane
- Battery acids (forklift batteries)
- Bleach
- Ammonia
- Boiler additives
- Acids
- Sodium hydroxide
- Anhydrous Ammonia
- Peroxides
- Lubricating oil
- Waste oils
- Carbon dioxide (cryogenic)
- Liquid nitrogen (cryogenic)
- Food ingredients (acids)
- Acetylene / Oxygen – shops
- Diesel (emergency generators)
- UST (onsite fueling stations)

Photo 9 – Food processor with no outdoor stormwater exposures – Notice of Non-applicability



Sanitation chemicals



Welding gases



Diesel generator



Propane - forklifts



Ammonia and refrigeration oil



Boiler additive (anti-corrosion)



Used refrigeration oil



Compressed gas – cryogenic

A. Hazardous Materials Business Plan – HMBP

The main requirement of the above laws is the completion and submission of a hazardous materials business plan (HMBP) and chemical inventory to the local enforcement agency. The submission of the HMBP is triggered when the facility stores, handles or generates hazardous materials that exceed the applicable thresholds. The most common thresholds are 500 pounds of solid, 55 gallons of liquid or 200 cubic feet of compressed gases of any hazardous material. HMBP must be submitted to the appropriate local certified CUPA Program.

The following link is an example of the Unified form needed to complete this requirement.

The following are the typical elements found in the HMBP:

- Owner or Operator Identification Information
- Emergency Personnel information
- A site map indication locations of the hazardous materials storage areas and the emergency evacuation plans
- Emergency response plans in the event of spills and releases
- Employee awareness training
- Risk Management Plans (for facilities with acutely hazardous materials)
- Underground storage tank information
- Financial assurance certifications (USTs and tiered permits)

Facilities that have submitted a HMBP are also subject to routine inspections by the local enforcement agencies. The inspections are conducted to ensure the hazardous materials and waste are stored and handled in accordance to applicable codes. The following are some best practices relative to the storage and handling of hazardous materials and the management of hazardous wastes:

B. Hazardous Materials Management

- Submit a completed HMBP to the local enforcement agency or CUPA Program
- Post of NFPA Placard
- Provide adequate separation of incompatible hazardous materials
- Label of hazardous material containers
- Label of empty containers
- Conduct employee annual Hazard Communication (HAZCOM) training
- Submit HMBP updates to the local CUPA Program
- Conduct periodic monitoring certification and leak testing (UST)
- Report hazardous materials discharges to CalEMA

C. Hazardous Waste Management

- Submit a completed HMBP to the local enforcement agency or CUPA Program
- Post of NFPA Placard
- Obtain a EPA ID number – hazardous waste generator
- Ensure that hazardous waste containers are in good condition, covered, stored properly

- Properly label all hazardous waste containers or storage areas
- Provide secondary containment to hazardous waste containers
- Inspect hazardous waste storage areas weekly
- Observe limitations to storage accumulation times
- Provide adequate storage and separation on incompatible hazardous waste
- Maintain documentation on the disposal of hazardous wastes (manifest)
- Proper storage of universal waste (lamps, electronics items, computers, switches)
- Records keeping (manifest, training, bills of lading)
- Submitting HMBP updates to the local CUPA Program

VIII. Release and Threatened Releases Reporting Requirements

A main portion of the California Community Right to Know Law is the requirement that releases or spills of hazardous materials be reported to emergency officials so that an appropriate response may be undertaken immediately. Additionally, spills or releases that are non hazardous materials but are wastes or materials that threaten or may impact the water quality (in the ground or surface waters) also need to be reported to the appropriate agencies so the proper response can be provided as soon as possible. All wholesale food facilities are subject to these requirements and must be aware of the actions that they are required to perform with the release or threatened release of such materials.

Spills or releases are “ any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping or disposing, into the environment, unless permitted or authorized by a regulatory agency. Reportable releases are also those that threaten human health, the environment and property. Spills that are not extreme hazardous materials and are immediately contained within the facility boundaries without harm to people or to the environment, do not need to be reported.

Examples of reportable spills or releases include:

- Ammonia release from refrigeration systems
- Release of hazardous materials and wastes such as acids and chlorine onto the ground and storm drain systems
- Sewage spills or overflows of greater than 1,000 gallons
- Discharge of new or used edible oils onto the ground and storm drain systems
- Discharge of liquid products onto the storm drain systems
- Discharge of fuel onto the ground and storm drain systems
- Discharge of wastewater (overflow from clarifiers) into the storm drain system

It is the responsibility of the facility operators to conduct the proper notification to the appropriate agencies when spills or releases occur. Whenever feasible and when conditions are safe to the workers, the facility and its operators have the responsibility of controlling the source of the spills and to reduce further impacts to the people and the environment.

The following are examples of spills and the agencies that should be notified:
 (Facilities in Los Angeles County only)

Table 9 – Spills Release Notification

Type of spill or Release	Agency / Telephone
1,000 gallons of sewage or 42 gallons of oil	California Emergency Management Agency (800) 852-7550 or (916) 845-8911
Spills or releases of hazardous materials or pollutants into the sewer	Los Angeles County Sanitation District (562) 699-7422 or (562) 437-6520 or the appropriate local agency
Spills or releases of hazardous materials or pollutants into the storm drain	Los Angeles County Public Works – Flood Control District (626) 458-4357 or (626) 861-0316 or the appropriate local agency
Spills of petroleum into the water of the United States or releases of 100 pounds of ammonia (NH3)	National Response Center 1-800 424-8802
Spills or releases of hazardous materials or pollutants into the rivers or streams	Ca. Dept. of Fish and Game (951) 443-2944 (Automatically notified by CalEMA)

This table applies to facilities in Los Angeles County

Following the reporting of the release of hazardous materials, written reports are required. Please consult the following reporting guidelines for additional details on emergency release reporting.



Photo10 – Illegal disposal of soda from a food warehouse

IX. Employee Safety and Injury Illness Prevention Plans (IIPP)

All employers in California are required to develop and maintain a written Injury and Illness Prevention Program (IIPP). The IIPP is aimed in improving workplace safety and health, increase productivity and reduce the costs of doing business. IIPP are often specific to the industries and to particular hazards related to that industry. In California, the IIPP requirements are exclusively regulated by the California Occupational Safety and Health Administration (CalOSHA). Within the plan, employers are required to address or mitigate potential employee hazards through routine awareness training, implementation of safe operational practices, personal safety equipment and the installation of engineering controls.

CalOSHA has provided employers with several tools that can help in the development of their individual IIPP. Please visit the CalOSHA website for more information.

In wholesale food facilities, environmental compliance and IIPPs are often interrelated and collectively provide a comprehensive safe environment for the employees and in the production of food products. For example, a meat cutting plant may experience industrial accidents involving amputation of fingers or arms. In addition to the resulting trauma from these accidents, food items, equipment and utensils are contaminated. At this point, local health departments may then direct these facilities to undertake the appropriate decontamination process and direct the disposal of food as needed. An effective IIPP reduces the chances of these accidents, the resulting trauma and the contamination risks to food and equipment.

In another example, the IIPP may require the installation of safety eyewash and showers near battery filling operations (electric forklifts). Some eyewash installations are often conducted without regard to the water source. In many situations, these eyewash stations have been connected, to industrial water, reclaimed water and water lines with a high potential cross contaminating chemicals. Numerous industrial accidents of this nature have been reported. Potentially, workers who desperately need the eyewash may experience greater harm when the water being used is contaminated. A comprehensive cross connection survey of the facility and familiarization with the water lines in the facility can provide facilities with a safe emergency eyewash/shower water supply.

Please refer to supplemental information indicated in the appendices of this document for further information on developing a facility's IIPP Program.

**APPENDIX AND SUPPLEMENTARY
INFORMATION**

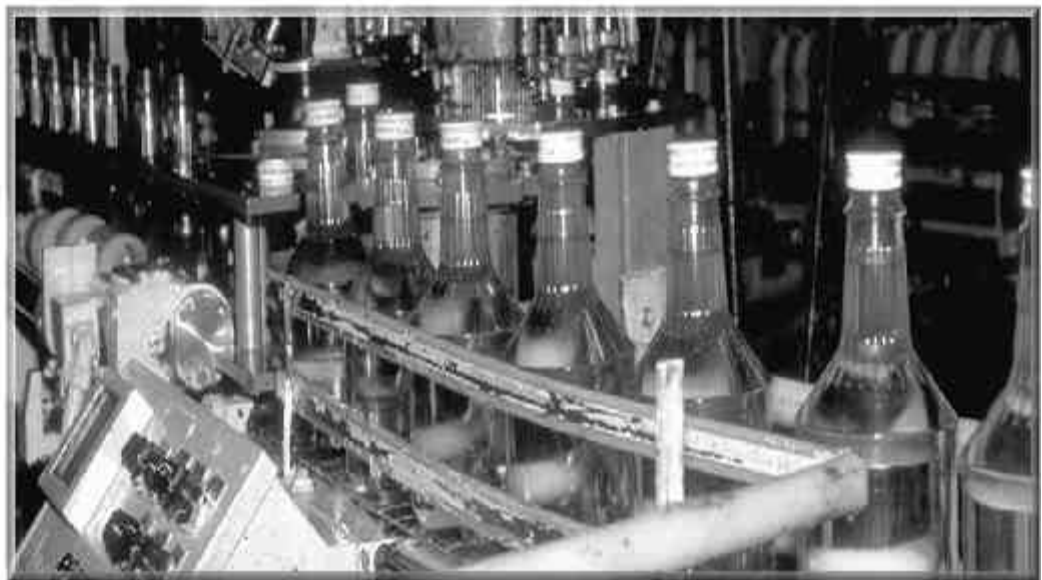
x. Appendix and Supplementary Information

A. Supplemental Guidebooks

- 1. Multimedia Environmental Compliance Guide for Food Processors – U.S. EPA**



Multimedia Environmental Compliance Guide for Food Processors



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1. THE GUIDE: WHAT IT IS; WHAT IT DOES

1.1 Why an Environmental Compliance Guide for Food Processors

As food processors, you are regulated by a variety of federal laws administered by the U.S. Environmental Protection Agency (EPA) that impact human activities and the environment. Noncompliance with these regulations can damage human health and the environment, and result in significant financial liabilities for clean up costs or fines. Environmental compliance may be difficult for some food processors that do not have the time, staff, or other resources necessary to determine their responsibilities. Also, environmental regulations and laws can be complicated, and information on environmental compliance may be difficult to locate. Adding to these complexities, you must be aware of and meet stringent food safety requirements. To assist you, EPA, with special assistance from the American Frozen Food Institute (AFFI), the American Meat Institute (AMI), the National Food Processors Association (NFPA) and the Food Industry Environmental Council (FIEC), has developed this guide to address these issues.

1.2 How to Use This Guide

This guide is intended to provide you, the owner/operator, with a good **first step** in understanding EPA's environmental requirements affecting your specific operations. The guide explains the basis of EPA's major statutes and provides a general overview of a food processor's major EPA requirements. The requirements discussed here should provide a good framework for understanding your federal environmental compliance responsibilities, **but this guide does not provide the final word on what your compliance responsibilities are and how you meet them.** You should consult directly EPA's regulations, program guidance, and other compliance assistance materials.

State/Local Requirements: *The regulations discussed in this guide are primarily EPA requirements. Your state may have its own, stricter requirements; however, state regulations usually are based on federal law. Be sure to check your state and/or local government environmental requirements.¹*

¹ *The Source Book of State Laws & Regulations for Food Processors*, published by the NFPA in June 1996, offers help in understanding the regulatory requirements in each of the 50 states.

Organization

The guide begins with a brief overview of the industry and an introduction to several important EPA policies and systems that are designed to foster environmental compliance. Following this introduction, a brief summary of the major environmental statutes applicable to the food processing industry is presented in Section 2.0 *Guide to EPA's Major Environmental Statutes*. Next, to assist you in identifying EPA's statutes and regulations applicable at your facility, Section 3.0 *Understanding the Process: Inputs, Outputs, and Applicable Federal Environmental*

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Regulations presents a method of identifying (1) your facility's wastestreams (regulated outputs) and (2) hazardous or other regulated materials that may be inputs to either your process or to ancillary operations (e.g., refrigeration).

Section 3.0 also helps you identify which EPA statute(s) may apply to your inputs and wastes. With this information, you can then refer to the following sections of the guide to learn more about applicable EPA regulations and requirements:

- C Section 4.0 How Do I Comply With Wastewater Discharge and Related Regulations?
- C Section 5.0 How Do I Comply With Safe Drinking Water Regulations?
- C Section 6.0 How Do I Comply With Air Regulations?
- C Section 7.0 How Do I Comply With the Emergency Planning and Community Right-to-Know Act Regulations?
- C Section 8.0 How Do I Comply With the Hazardous Waste Regulations?
- C Section 9.0 How Do I Comply with Spill or Chemical Release Requirements?
- C Section 10.0 Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA, and TSCA.

Remember that this guide highlights major EPA requirements only. To help you in understanding the full range of EPA requirements, Appendix A. *Summary of Major Regulations From the CFR* provides relevant portions of the Code of Federal Regulations (CFR) in an easier-to-understand format (with CFR citations). If you have additional questions, Appendix B. *Resources* provides state and federal agency contacts, hotlines, and an annotated list of important EPA policies and guidance. References associated with this guide are presented in Appendix C. *References*.

Your state may have its own, stricter requirements than the federal requirements. Be sure to contact your state regulatory agency for information on state requirements.

Attention to Food Safety

As you are well aware, food safety is a paramount objective of food processors and agencies which regulate the industry. Food safety should be kept in mind when reviewing the information in this guide and complying with environmental regulations. Under the Federal Food, Drug and Cosmetic Act (FFDCA), the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (USDHHS), and the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) regulate the food processing industry to assure the safety of the food supply. These regulations address sanitation, microbial pathogens, and other sources of foodborne illness. EPA also is involved in food safety by virtue of its responsibility under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) to set pesticide tolerances or maximum pesticide residue levels. Some recent activity related to food safety which may directly affect food processors includes the following:

- C In 1996, Congress amended both FFDCA and FIFRA under the Food Quality Protection Act (FQPA) to restructure the standard setting, review, and enforcement authorities for pesticide tolerance and residues in food. See Section 10.3 *Federal Insecticide, Fungicide, and Rodenticide Act* for more information.
- C On May 12, 1997, Vice President Al Gore announced a five-point Administration plan to strengthen and improve food safety, known as the *National Food Safety Initiative*

Program. The plan sets forth new steps to reduce foodborne illness from microbial contaminants by working with consumers, producers, industry, states, universities, and the public.

Ideas for Pollution Prevention

Many industry sectors are experimenting with new approaches to environmental compliance through pollution prevention (P2) techniques, such as reducing the use of hazardous chemicals by switching to alternative less hazardous substances, recycling materials, and reducing wastewater discharge by means of water conservation. The final section of this guide, Section 11.0 *Pollution Prevention Techniques*, contains general information about means of reducing or eliminating your wastestreams. Cost effective compliance and pollution prevention techniques are discussed further in Section 1.5.

1.3 Tools That Encourage Environmental Compliance

1.3.1 Compliance Incentives and Policies

Since 1986, EPA has promoted the use of environmental auditing by companies in the United States. In 1995, EPA updated and expanded its earlier policy in the form of two new policies that encourage companies to achieve environmental compliance by providing incentives for them to conduct environmental audits voluntarily (see *Incentives for Self-Policing Policy*) and to participate in onsite compliance assistance programs (see *Small Business Policy*). These policies focus on proactive identification and prompt correction of violations, and provide penalty mitigation for those who qualify.

Environmental Audit: For purposes of these policies, an environmental audit is defined as “a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirements.”

- c. ***Incentives for Self-Policing Policy.*** In 1995, EPA issued *Incentives for Self-Policing: Discovery, Disclosure, Correction, and Prevention of Violations* (commonly known as the *Audit Policy*). Under this policy, companies that (1) voluntarily discover, promptly disclose, and correct violations; (2) prevent their recurrence; and (3) promptly remedy any resulting damage do **not** face gravity-based penalties (i.e., the penalty amount over and above the company’s economic gain from noncompliance). EPA retains its discretion to recover **economic benefit** gained as a result of noncompliance, so that companies will not be able to obtain an economic advantage over their competitors by delaying their investment in compliance. EPA continues its practice of not routinely requesting environmental audit reports. For additional information on this policy and how it may apply to you, you can review the following: the final policy in the *Federal Register* (60 FR 66706-66711 [December 22, 1995]); the *Audit Policy Interpretive Guidance*; and the *Audit Policy Update*, EPA’s newsletter about the implementation of the policy. All

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three are available at the website of EPA's Office of Enforcement and Compliance Assurance (OECA) at <http://es.epa.gov/oeca/auditpol.html/>.

- C **Small Business Policy.** EPA's *Policy on Compliance Incentives for Small Businesses (Small Business Policy)*, issued on May 20, 1996, was developed to help small businesses achieve environmental compliance. If you are a small business with 100 or fewer employees in the company, you may be eligible to have all potential penalties for noncompliance waived, if you agree to come into compliance and meet other criteria.

Definition: Any business owned by a person, corporation, or partnership that employs 100 or fewer individuals across all facilities and operations owned by the entity is considered a small business.

The policy provides incentives such as **penalty waivers** or **penalty reduction** for businesses that participate in government-sponsored, onsite compliance assistance programs, or that conduct environmental audits to discover, disclose, and correct violations. Onsite compliance assistance includes information or assistance provided by EPA, a state agency, or other government agency or government-supported entity during a visit to your facility to help you comply with mandated environmental requirements. This assistance may be obtained confidentially from those state assistance programs that offer such confidentiality.

The sooner **noncompliance** is disclosed and corrected, the greater the benefits. A penalty can be waived entirely or reduced significantly if violations are self-disclosed to the proper authorities and corrected. If compliance is delayed, however, and EPA discovers the violation on its own, the ensuing penalties may be very costly. You can review the final policy [*Federal Register* 61 FR 27984; June 3, 1996], and more information on how it may apply to your business by accessing <http://es.inel.gov/oeca/smbusi.html/>.

To assist you with compliance, EPA and states have developed numerous guides written in "plain English" on how to conduct audits and understand regulations. Contact the Small Business Ombudsman in your EPA regional office or visit EPA's Internet site for more information at <http://www.epa.gov/ttnsbap1/>-- *Small Business Assistance Programs*. You also may call the EPA's National Small Business Ombudsman's toll-free hotline at 1-800-368-5888.

Many states have adopted incentives for environmental auditing -- some through policies and others by legislation. Some states have adopted laws that provide broad privileges and immunities for environmental audit findings. EPA opposes these laws and is working with state officials to resolve issues with regard to the state maintaining necessary enforcement and information gathering authorities, and ensuring legally mandated public access to information.

To the extent that violations, revealed through an audit and disclosed under a state audit privilege and immunity law, continue to be addressed inadequately, EPA may take action through its oversight authorities granted under the federal environmental laws. However, EPA has not brought, and will not bring enforcement actions against companies merely because they take advantage of state audit privilege and immunity laws.

1.3.2 Environmental Management Systems

An **environmental management system (EMS)** uses a defined process to identify the environmental impacts of your operations, set goals, implement procedures to minimize those impacts, and measure results to determine whether established goals and procedures are appropriate. Such a system has the potential to improve your company's environmental performance and compliance with regulatory requirements. It also may save your company money, reduce liability, and improve efficiency in operations. An example in the food processing industry is the environmental operating plan that Jack M Berry, Inc. (LaBelle, FL), a mid-sized juice-processing facility, is developing under EPA's Project XL (X for environmental eXcellence and L for Leadership). See Section 11.4.1 *EPA Programs* for a brief explanation of this effort.

At this time, EPA is not basing any regulatory incentives solely on the use of EMSs, or certification to ISO 14001. For more information on EPA's position, see the Federal Register Notice, EPA Position Statement on Environmental Management Systems and ISO 14001 and a Request for Comments on the Nature of the Data to be Collected from Environmental Management System/ISO 14001 Pilots, 63 FR 12094-97, March 12, 1998, from the EPA's Office of Reinvention. This notice can be accessed at EPA's website at <http://www.epa.gov/reinvent/notebook/emsfr1.htm/>.

EPA supports the development and use of EMSs that help a business achieve its environmental obligations and broader environmental performance goals. EPA encourages the use of EMSs that focus on improved environmental performance and compliance, as well as source reduction (pollution prevention) and system performance. By working in partnership with a number of states, EPA is exploring the utility of EMSs, especially those based substantially on ISO 14001. ISO 14001, an international standard finalized in 1996 by the International Organization for Standardization (ISO), is based on previous standards and agreement by international business and government representatives.

An EMS includes five key elements which are defined as follows:

(1) The **environmental policy** sets the general direction for your company's EMS, and if appropriately communicated, shows management's commitment that facilitates implementation of the EMS throughout all levels of your organization.

(2) **Planning** means examining the environmental aspects of your operations more closely. Based on this review, you can develop objectives and targets designed to minimize environmental impacts and improve the overall performance of your company. When you complete the planning process, your organization will have defined the objectives of its environmental program, and developed a plan to meet them.

When planning for an EMS, you might examine water usage. Based on this review, you may decide to reduce water usage by installing low flow nozzles.

Through the remaining components, (3) **implementation and operation**, (4) **checking and corrective action**, and (5) **management review**, your company develops mechanisms to achieve these objectives, reduce catastrophic risk, and continually monitor its environmental activities. These mechanisms are specific to your company's operations, and are reviewed and revised to promote continuous improvement.

EPA recognizes the potential value of a mature EMS. Through initiatives such as Project XL, EPA is working with companies to test EMSs that are designed to achieve superior environmental performance. In 1994, through its Environmental Leadership Program (ELP), EPA issued guidance on EMSs, entitled *Draft Program Guide: Appendix A - ELP Environmental Management System Guidelines*. Although developed for use by facilities applying to ELP, the criteria in the document may be useful to your company. You can access this document through the ELP Homepage at <http://es.epa.gov/elp/append-a.html/>. See Section 11.4.1 *EPA Programs* in this guide for a brief explanation of both Project XL and ELP.

1.4 Brief Overview of the Food Processing Industry

The food processing products industry is a manufacturing industry that processes raw or prepared animal, marine, and vegetable materials into intermediate foods or edible products. This industry includes establishments manufacturing or processing foods and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls. Processes of this industry result in the conversion of bulky, perishable, or inedible food materials into more palatable, or more convenient foods and beverages.¹

Table 1-1 lists the Standard Industrial Classification (SIC) and the North American Industrial Classification System (NAICS) codes for the types of establishments (i.e., facilities) as defined by the U.S. Census Bureau within SIC Code 20.

As of the Fall 1998, EPA has not published an overall plan for phasing in NAICS codes. But several EPA programs that rely on SIC codes in determining whether a regulatory requirement applies to a given facility have begun to adopt the NAICS codes. The EPCRA Non-313 Program and the Oil Pollution Prevention Program proposed such changes in regulatory criteria in the Federal Register in 1998. Also, the EPCRA 313 Toxic Release Inventory Program has begun planning how to incorporate NAICS codes into its regulatory criteria. This may be a several year effort. For additional information about these respective changes, contact EPA's Chemical Emergency Preparedness and Prevention Office (CEPPO); the Oil Program Center (OPC); or the Office of Prevention, Pesticides and Toxics (OPPT). Information about the EPCRA requirements and Internet sites can be found in Section 7.0 *How Do I Comply With the Emergency Planning and Community Right-to-Know Act Regulations?*; information about the Oil Pollution Prevention Program requirements and Internet site can be found in Section 4.6 *Oil Pollution Prevention Regulation* of this guide.

¹ U.S. Environmental Protection Agency. *Industry Profiles: Food and Kindred Products and Stone, Clay, Glass, and Concrete*. Office of Solid Waste. Prepared by ICF, Inc., July 1994.

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Table I-1. SIC and NAICS Codes for the Food Processing Industry*

SIC			
SIC Codes	Types of Facilities	NAICS Codes	
201	Meat products	311611 311612 311615, 311999	Meat packaging plants Sausages and other prepared meat products Poultry slaughtering and processing
202	Dairy products	311512 311513 311514 31152 311511	Creamery butter Natural, processed, and imitation cheese Dry, condensed, and evaporated dairy products Ice cream and frozen desserts Fluid milk
203	Canned, frozen, and preserved fruits, vegetables, and food specialties	311422, 311999 311421 311423 311421, 311941 311411 311412	Canned specialties Canned fruits, vegetables, preserves, jams, and jellies Dried and dehydrated fruits, vegetables, and soup mixes Pickled fruits and vegetables, vegetable sauces and seasonings, and salad dressings Frozen fruits, fruit juices, and vegetables Frozen specialties not elsewhere classified
204	Grain mill products	311211 31192, 31193 311212 311822 311221 311111 311611, 311119	Flour and other grain mill products Cereal breakfast foods Rice milling Prepared flour mixes and doughs Wet corn milling Dog and cat food Prepared feeds and feed ingredients for animals and fowls, except dogs and cats
205	Bakery products	311812 311821, 311919, 311812 311813	Bread and other bakery products, except cookies and crackers Cookies and crackers Frozen bakery products, except bread
206	Sugar and confectionary products	311311 311312 311313 31133, 31134 31132 31134 311911	Cane sugar, except refining Cane sugar refining Beet sugar Candy and other confectionary products Chocolate and cocoa products Chewing gum Salted and roasted nuts and seeds

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Table 1-1. SIC and NAICS Codes for the Food Processing Industry*

SIC		NAICS	
SIC Codes	Types of Facilities	NAICS Codes	Types of Facilities
207	Fats and oils	311223, 311225 311222, 311225 311223, 311225 311613, 311711, 311712, 311225 311225, 311222, 311223	Cottonseed oil mills Soybean oil mills Vegetable oil mills, except corn, cottonseed, and soybeans Animal and marine fats and oils Shortening, table oils, margarine, and other edible fats and oils, not elsewhere classified
208	Beverages	31212 311213 31213 31214 312111, 312112 31193, 311942, 311999	Malt beverages Malt Wines, brandy, and brandy spirits Distilled and blended liquors Bottled and canned soft drinks and carbonated waters Flavoring extracts and flavoring syrups, not elsewhere classified
209	Miscellaneous food preparations and kindred products	311711 311712 31192, 311942 311919 312113 311823 311423, 111998, 31134, 311991, 31183, 31192, 311941, 311942, 311999	Canned and cured fish and seafoods Prepared fresh or frozen fish and seafoods Roasted coffee Potato chips, corn chips, and similar snacks Manufactured ice Macaroni, spaghetti, vermicelli, and noodles Food preparations, not elsewhere classified

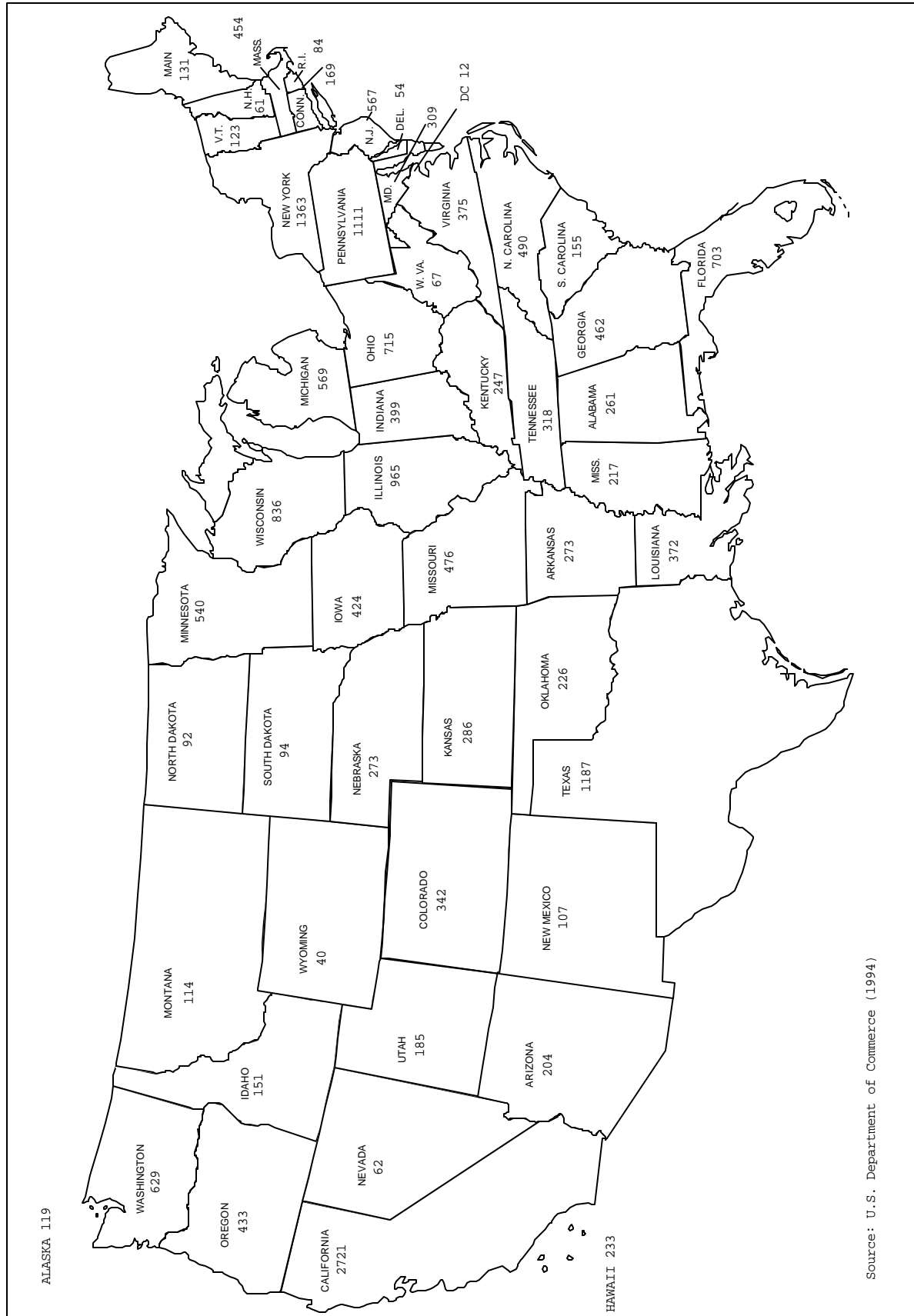
* Table 1-1 lists the 1987 SIC codes and 1997 NAICS codes for the food processing industry. The 1997 NAICS codes will replace the 1987 SIC codes in publications of the U.S. Statistical Agencies over several years (1998-2004), beginning with publications of the NAICS United States Manual. The NAICS Implementation Schedule for these agencies is available on the U.S. Census Bureau's Internet site at <http://www.census.gov/epcd/naics/timeschd.html/>.

Encompassing all facilities in SIC group 20, titled Food and Kindred Products, this is one of the largest industry groups comprising the manufacturing sector of the U.S. economy.² Figure 1-1, shows the distribution of food processing facilities across the U.S. in 1994. The four states with the largest number of establishments were:

- California: 2,721 establishments (13.1%)
- New York: 1,363 establishments (6.5%)
- Texas: 1,187 establishments (5.7%)
- Pennsylvania: 1,111 establishments (5.3%).

² The term "food processing" is used throughout the guide in place of Food and Kindred Products.

Figure I-1. Food and Kindred Products (SIC 20): Distribution of Establishments in the U.S.



Source: U.S. Department of Commerce (1994)

Together, these states contain approximately 30 percent of the establishments nationwide. According to the 1994 Census of Manufacturers, there were 20,800 establishments in SIC 20 with shipments valued at \$430 billion. In terms of employment, the food processing industry ranks fourth in the Nation in 1994, providing 1.5 million jobs. According to the data in EPA's Toxic Release Inventory (TRI) system, the chemicals released from the food processing industry that may have environmental impact include ammonia, phosphoric acid, sulfuric acid, chlorine, hydrochloric acid, nitric acid, copper compounds, and zinc compounds.

1.5 Cost Effective Compliance and Pollution Prevention Techniques

Understanding federal, state, and local environmental requirements is the first step to cost effective compliance. Finding the most effective means of environmental compliance and going beyond compliance are the next steps. This involves knowing what your compliance activities are and how much you are spending on them (in relative terms at least). This involves establishing a baseline of how much your facility is spending to comply with environmental regulations. With this type of information, you can begin to assess where you might save money through more effective means of complying or through pollution prevention.

Compliance activities for your facility involve interactions between you and the regulatory agencies. These activities include regulatory obligations such as obtaining permits, paying fees, monitoring, and reporting. Planning activities, such as emergency response, and recordkeeping also may be required which may have additional costs. And, of course, pollution control may involve both capital and operating expenses. Depending on the wastestreams your facility generates and how you manage those wastes, you may be subject to this array of requirements. Pollution prevention techniques may help you cut costs, and, in some instances, may enable your operation to drop below regulatory thresholds and thereby become free of certain regulatory requirements.

What is Pollution Prevention?

Pollution prevention (P2) encompasses both source reduction and in-process recycling. The federal Pollution Prevention Act of 1990 defines source reduction as any practice that reduces the amount of any hazardous substance, pollutant, or contaminant entering any wastestream (including fugitive emissions) prior to recycling, treatment, or disposal, and that reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants. The Act declares that governments, businesses and industries, and individuals should prevent or reduce pollution at its source wherever feasible. Where source reduction cannot be achieved, the Act advocates that responsible parties reuse and recycle to reduce the quantity of hazardous waste requiring treatment.

EPA has adopted a hierarchical approach to environmental protection, including source reduction and in-process recycling, as follows:

- A. **Source Reduction.** The most desirable option of the hierarchy and the most effective way to reduce risk is through source reduction. Source reduction is defined as any

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method that reduces or eliminates the source of pollution entirely. This includes any practice that:

- Reduces the amount of hazardous substances, pollutants, or contaminants that enter a wastestream or are released otherwise into the environment prior to recycling, treatment, or disposal.
- Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

B. ***Recycling.*** Where pollution cannot be prevented through source reduction methods, the wastes contributing to the pollution should be recycled, preferably through closed loop, in-process or in-line methods. Other recycling approaches include the use, reuse, or reclamation of waste after it has been generated.

C. ***Treatment.*** Wastes that cannot be feasibly reduced at the source or recycled should be minimized through treatment in accordance with environmental standards that are designed to reduce both the hazard and volume of wastestreams.

D. ***Disposal.*** Finally, any residues remaining from facility operations that cannot be reduced, reused, recycled or treated should be disposed of safely to minimize their potential for release into the environment. Disposal involves the transfer of a pollutant to the environment in either air, solid waste, or water.

Section 11.0 *Pollution Prevention Techniques* provides general information and references on P2 techniques you might implement at your facility. Some are easy, some are more challenging, and they all involve changes in how you do business. EPA encourages pollution prevention as a solution.

Keep in mind that there may be state pollution prevention requirements with which you must comply. Contact your state regulatory agency for more information. Also, carry out all pollution prevention activities at your facility in accordance with food safety requirements of the USDA and FDA.

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2. GUIDE TO EPA'S MAJOR ENVIRONMENTAL STATUTES

2.1 Introduction

This section discusses the federal statutes administered by U.S. Environmental Protection Agency (EPA) along with the citations to EPA regulations that may apply to the food processing sector. For a brief discussion of pending and proposed EPA regulations that may apply to the food processors, consult Appendix A.7 *Pending and Proposed Regulations* of this guide.

The descriptions within Section 2.0 are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. You must keep in mind that this section discusses federal environmental laws administered by EPA (with a few exceptions) and their related regulations only. State and/or local regulations may be more stringent than federal regulations. Therefore, it is essential to consult appropriate state and/or local agencies to learn the full range of environmental requirements that may apply to your facility.

For further information about federal requirements, you should consult the Code of Federal Regulation (CFR) citation(s) listed at the end of each section, and review Appendix A. *Summary of Major Regulations From the CFR* that contains summaries of the portions of the CFR pertaining to each major statute discussed in the guide. Appendix B. *Resources* lists regional and state regulatory agency contacts and EPA hotlines. Appendix C. *References* lists documents used in developing this guide and additional references for your use.

2.2 Clean Water Act (CWA) and Oil Pollution Act (OPA)

The discharge of wastewater from your food processing facility generally will be covered by either the federal Clean Water Act (CWA) or the Safe Drinking Water Act (SDWA) (see Section 5.5 *Underground Injection Control*). In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), now known as the CWA, which established the basic framework for protecting the waters of the United States. The CWA and its regulations now focus on keeping conventional, nonconventional (including oil and grease), and toxic water pollutants out of our rivers, lakes, and oceans.

Wastewater discharge requirements are discussed in more detail in Section 4.0 and Appendix A.1. For information on planning and release reporting requirements for spills to water, see Section 9.0.

Generally, federal regulations target three types of industrial discharges. Industrial wastewater discharges from food processing facilities probably fall into one of these categories:

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- (1) **Direct discharges** which include any wastewater from an industrial facility (e.g., untreated, unpolluted wastewater or treated process wastewater) that is discharged straight to surface waters (e.g., ponds, lakes, oceans, streams, and wetlands). Storm water discharges also are considered a type of direct discharge.
- (2) **Indirect discharges** which include any wastewater from an industrial facility that is discharged to a publicly owned treatment works (POTW), which subsequently discharges to a surface water.
- (3) **Land application** of industrial wastewater discharges. Land application discharges include any wastewater from an industrial facility that is discharged to land to either condition the soil or to fertilize crops or other vegetation grown in the soil.

For more information, see:

- Section 4.0 *How Do I Comply With Wastewater Discharge and Related Regulations?*
- 40 CFR 110-122, 40 CFR 400-500: Clean Water Act and Effluent Guidelines
- Appendix A.1. *Summary of Principal Regulations Under the Clean Water Act*

NPDES Permit Requirements. The National Pollutant Discharge Elimination System (NPDES) program (CWA Section 402) controls direct discharges into navigable waters. A NPDES permit sets limits, often referred to as **effluent limits** on the amounts of pollutants that can be discharged to surface waters.

Permits must be obtained from EPA or the authorized state or territory. As of March 1998, EPA has authorized 42 states and one territory to administer the NPDES program. EPA has not delegated authority to the following states and territories: Alaska, Arizona, District of Columbia, Idaho, Maine, Massachusetts, New Hampshire, New Mexico, Pacific Territories, Puerto Rico, Texas, and the federal Tribal Lands.

NPDES requirements are discussed in more detail in Section 4.3 and Appendix A.1.

For more information, see:

- Section 4.3 *Am I A Direct Discharger?*
- 40 CFR 122: National Pollutant Discharge Elimination System Permit Requirements
- Appendix A.1. *Summary of Principal Regulations Under the Clean Water Act*

Storm Water Discharges. In 1987, the CWA was amended to require EPA to establish a program to address **storm water discharges** as point sources. Under Phase I of the storm water program, which currently is being implemented, storm water discharges associated with industrial activity, such as food processing, must be covered by a NPDES storm water permit regardless of whether they discharge to a municipal separate storm sewer system or directly to waters of the United States. These permits provide a mechanism for monitoring the discharge of pollutants from these sources to waters of the United States and for establishing appropriate controls. The term “storm water discharge associated with industrial activity” means a storm water discharge from one of 11 categories of industrial activity defined

Storm water requirements are discussed in more detail in Section 4.3.2 and Appendix A.1.

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in 40 CFR 122.26. See Section 4.3.2 *Storm Water Dischargers* for more information on these categories and how they apply to your facility.

Food processors that have **no exposure of materials and activities to storm water** are exempt from these requirements. **No exposure** means that there is **no possibility** of storm water, snow fall, snow melt, or storm water “run on” coming in contact with any process or storage related activity. Additionally, storm water permits are not required where runoff flows through a combined sewer to a POTW.

Facilities can comply with NPDES permit requirements for storm water discharges by submitting (1) a Notice of Intent (NOI) to be covered under a **general** permit (Baseline or Multi-Sector); or (2) an application for an **individual** permit; and (3) complying with all of the conditions specified in the applicable permit. In the past, facilities could submit an application to be covered under a group permit, but this option and the original group permit have expired. As of March 1998, 42 states and one territory have been delegated authority by EPA to administer the NPDES program. EPA has not delegated authority to the following states and territories: Alaska, Arizona, District of Columbia, Idaho, Maine, Massachusetts, New Hampshire, New Mexico, Pacific Territories, Puerto Rico, Texas, and the federal Tribal Lands. Of the delegated NPDES states and territories, only the Virgin Islands has not been delegated authority for the storm water general permits program as well.

As part of the storm water permits, facilities are required to develop and implement storm water pollution prevention plans (SWPPPs). These plans are intended to prevent storm water from coming in contact with potential contaminants. Each plan is facility specific because every facility is unique in its source, type and volume of contaminated storm water discharges. Regardless of the variations, all plans must include several common elements, such as a map and site specific considerations.

For more information, see:

- Section 4.3.2 *Storm Water Dischargers*
- 40 CFR 122.26: Storm Water Discharges
- Appendix A.1. *Summary of Principal Regulations Under the Clean Water Act*

Pretreatment Program. Industrial wastewater that is treated by a POTW is another type of discharge that is regulated by the CWA. The national **pretreatment program** (CWA 307(b)) controls the indirect discharge of pollutants to POTWs by “industrial users.” Facilities regulated under 307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect the following: (1) municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system from industrial activities; (2) the quality of sludge generated by these plants; and (3) the receiving water by preventing the introduction of pollutants into POTWs which will pass through the treatment works. Discharges to a POTW are regulated primarily by the POTW itself, rather than the state or EPA. New food processing facilities, or facilities that have not contacted their POTW in the past, can find the number of their local POTW in the phone book. The wastewater treatment superintendent or pretreatment coordinator can provide the facility with any necessary information.

Pretreatment requirements are discussed in more detail in Section 4.4.1 and Appendix A.1.

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There are three types of pretreatment requirements: requirements for general industry (**general pretreatment standards**), requirements for specific industries (**categorical pretreatment standards**), and locally established requirements for specific facilities (**local limits**). EPA does not consider food processing facilities to be categorical users and has not established specific numerical limits for indirect discharges from food processors. Hence, **categorical pretreatment standards** that apply to food processing operations require compliance with 40 CFR 403 (**general pretreatment standards**). **Local limits** may also apply to your facility.

For more information, see:

- Section 4.4 *Am I An Indirect Discharger?*
- 40 CFR 403: Pretreatment Program Requirements
- Appendix A.1. *Summary of Principal Regulations Under the Clean Water Act*

Oil Pollution Prevention Requirements. In 1973, EPA issued the Oil Pollution Prevention Regulation (40 CFR 112), also known as the Spill Prevention, Control and Countermeasures (SPCC) regulation, to address the oil spill prevention provisions contained in the Clean Water Act (CWA) of 1972. The main objective of the SPCC program is to **prevent** oil spills from **regulated aboveground and underground storage tanks** from reaching navigable waters of the U.S. or adjoining shorelines. In 1990, Congress passed the Oil Pollution Act (OPA) that amended Section 311 of the CWA to require **substantial harm** facilities to develop and implement facility response plans (FRPs). FRPs help facility owners/operators develop a response organization and identify the resources needed to respond to an oil spill adequately and in a timely manner.

Oil Pollution Prevention requirements are discussed in more detail in Section 4.6 and Appendix A.1.

Under the CWA, the definition of oil includes oil of any kind and any form, such as petroleum and nonpetroleum oils. Generally, oils fall into the following categories: crude oil and refined petroleum products, edible animal and vegetable oil, other oils of animal or vegetable origin, and other nonpetroleum oils.

EPA's regulation requires facilities to prepare a plan and implement measures to prevent and control oil spills, regardless of the cause (e.g., human operational error, equipment failure or natural causes, such as lightning striking a tank). If your facility is subject to the SPCC requirements, EPA requires you to prepare an SPCC plan and conduct an initial screening to determine whether you are required to develop an FRP. Those facilities that could cause **substantial harm** to the environment must prepare and submit an FRP to EPA for review.

In the event of an oil spill or release, you must first report it to the **National Response Center at 1-800-424-8802 or 703-412-9810 (Washington, D.C. area)**. In addition, you (the owner or operator of a regulated facility) must submit, in writing, certain information including the SPCC Plan to the EPA Regional Administrator within 60 days, if the release meets either of the following conditions: (1) **either** a single discharge of more than 1,000 gallons of oil; **or** (2) two reportable spills/discharges of oil in harmful quantities, during any 12-month period, into or upon navigable waters, shorelines, etc.

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For more information, see:

- Section 4.0 *How Do I Comply With Wastewater Discharge and Related Regulations?*
- 40 CFR 112 Oil Pollution Prevention Regulation
- Appendix A.1. *Summary of Principal Regulations Under the Clean Water Act*

Examples of CWA Enforcement Provisions and Penalties

The 1987 amendments to the CWA increased EPA's penalty authorities as an enforcement tool. Congress added new authority for assessment of administrative penalties and increased penalties for civil and criminal violations. Some examples of EPA's enforcement authorities under the NPDES Program and the Oil Pollution Prevention Program are summarized below. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996. See Section 2.11 for more information.

NPDES Program

- C Federal civil penalties: Persons who discharge pollutants from a point source without a NPDES permit or in violation of that permit may be subject to the following: Administrative penalties up to \$11,000 per day per violation; civil judicial penalties of up to \$27,500 per day per violation.
- C Federal criminal penalties: Penalties for negligent violation may include fines up to \$25,000 per day of violation or one year imprisonment, or both. Penalties for knowing violations may include fines up to \$50,000 per day of violation or imprisonment of up to three years, or both. Penalties for knowing endangerment may include fines up to \$250,000 or imprisonment for not more than 15 years.

Oil Pollution Prevention Program

For discharges of oil or hazardous substances from onshore or offshore facilities, the owner, operator, or person in charge may be subject to the following:

- C Federal civil penalties: Administrative penalties up to \$11,000 per day per violation; civil judicial penalties of up to \$27,500 per day of violation, or up to \$1,100 per barrel of oil or unit of reportable quantity discharged. Violations which are the result of gross negligence or willful misconduct are subject to civil judicial penalties of not less than \$110,000 and not more than \$3,300 per barrel of oil or unit of reportable quantity discharged.
- C Federal criminal penalties: Knowing violations may result in fines of up to \$50,000 per day of violation, or up to three (3) years of imprisonment, or both; knowing endangerment may include fines up to \$250,000 or imprisonment for not more than 15 years.

See Section 2.11.2 *Summary of Food Processing Cases in ECAARs from FY 1991 - 1997* for a description of CWA cases.

Note: EPA's Office of Water (202-260-5700) will direct callers with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water Resource Center at 202-260-7786.

2.3 Safe Drinking Water Act (SDWA)

The SDWA is the federal legislation that protects public health by regulating public drinking water and underground injection. EPA is responsible for writing regulations to carry out the provisions of the Act. Fifty-four of 56 states and territories have primacy to enforce compliance with National Primary Drinking Water

Regulations (NPDWRs), as well as monitoring/reporting and public notification requirements contained in 40 CFR 141. EPA has primacy in Wyoming, Washington, D.C., and Tribal Lands, and may also take enforcement action in a primacy state where the state does not take an enforcement action in response to a violation. Generally speaking, most primacy states adopt drinking water regulations which closely reflect the federal requirements.

Safe drinking water regulations are discussed in more detail in Section 5.0 and Appendix A.2.

EPA has developed national primary and secondary drinking water regulations under its SDWA authority, as well as monitoring/reporting, and public notification requirements. As part of the NPDWRs, EPA has developed maximum contaminant levels (MCLs) and treatment techniques (TTs) for more than 80 contaminants. MCLs are based on maximum contaminant level goals (MCLGs) and other factors. When there is no reliable method that is economically and technically feasible to measure a contaminant at particularly low concentrations, a TT is set rather than an MCL. Examples of TT rules are the Surface Water Treatment Rule and the Lead and Copper Rule. See Section 5.4.1 *National Primary Drinking Water Regulations* for more information.

National secondary drinking water regulations (NSDWRs) are federal guidelines regarding taste, odor, color, and certain other non-aesthetic effects of drinking water. These regulations are not federally enforceable. EPA recommends them to states as reasonable goals, but federal law does not require water systems to comply with them. States may however, adopt their own enforceable regulations governing these concerns. Therefore, check your state's drinking water regulations and contact your state regulatory agency.

In addition to EPA's SDWA requirements, water used in food processing operations must meet the Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) requirements. The FDA, under its good manufacturing practice regulations, requires that "any water that contacts food or food-contact surfaces shall be safe and of adequate sanitary quality" (Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food, 21 CFR 110.37). In addition, the USDA's Food Safety and Inspection Service (FSIS) sets standards for activities associated with the production of meat and poultry products, including standards involving water use and reuse.

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For more information, see:

- Section 5.0 *How Do I Comply With Safe Drinking Water Regulations?*
- 40 CFR 141: National Primary Drinking Water Regulations
- 40 CFR 142: National Drinking Water Regulations Implementation
- 29 CFR 110: Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food
- ◻ Appendix A.2. *Summary of Principal Regulations Under the Safe Drinking Water Act*

Underground Injection Control (UIC) Requirements. The SDWA UIC program (40 CFR 144-148) is a permit program designed to protect underground sources of drinking water by regulating the injection of liquid waste into five classes of injection wells. The UIC permit program is primarily enforced by primacy states; however, EPA maintains primacy for all wells in 13 states and territories, all Tribal Lands, and for some classes of wells in 7 states.

UIC requirements are discussed in Section 5.5 and Appendix A.2.

If your facility meets certain criteria, you are required to obtain UIC authorization by permit or by rule to inject liquid waste. UIC permits include design, operating, inspection, closure, and monitoring requirements. Wells used to inject hazardous wastes also must comply with RCRA corrective action standards (40 CFR 264) in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restriction (LDR) standards. See Section 8.6, Compliance Requirements for SQGs and LQGs, for more information on LDR standards.

For more information, see:

- Section 5.5 *Underground Injection Control (UIC) Requirements*
- 40 CFR 144-148: Underground Injection Control Program
- ◻ Appendix A.2: *Summary of Principal Regulations Under the Safe Drinking Water Act*

Examples of SDWA Enforcement Provisions and Penalties

The 1986 amendments to the SDWA increased EPA's penalty authorities as an enforcement tool. Congress added new authority for assessment of administrative penalties and increased penalties for civil and criminal violations. These authorities were further strengthened for the Public Water Supply System (PWSS) program by the 1996 SDWA amendments. Some examples of EPA's enforcement authorities under the PWSS and UIC programs are summarized below.

PWSS Program

- ◻ Federal civil penalties: Persons who violate any applicable national primary drinking water regulation may be subject to the following penalties: up to \$27,500 for failure to comply with any Administrative Compliance Order (any penalty sought in excess of \$25,000, must be assessed by a civil judicial action); civil judicial penalties of up to \$27,500 per day per violation.
- ◻ Federal criminal penalties: Persons who tamper with or attempt to tamper or threaten to tamper with a public water supply may be subject to the following: for tampering,

not more than 5 years imprisonment, or fined in accordance with Title 18 U.S.C., or both; for attempting or threatening to tamper, not more than 3 years imprisonment, or fined in accordance with Title 18 U.S. C., or both; or a civil penalty of not more than \$55,000 for any tampering, or not more than \$22,000 for any attempt or threat.

Underground Injection Control

Persons who violate the requirements of an applicable UIC requirement may be subject to:

- C Federal civil penalties: Administrative penalties up to \$11,000 per day and civil judicial penalties of up to \$27,500 per day per violation.
- C Federal criminal penalties: Criminal penalties for willful violations may include fines in accordance with Title 18 U.S.C. or three years imprisonment, or both.

EPA also has emergency powers that are applicable to both PWSS and UIC when a contaminant, that may present an imminent and substantial endangerment to the health of persons, is present in or likely to enter a public water system or an underground source of drinking water.

Note: EPA's Safe Drinking Water Hotline (1-800-426-4791) provides answers to questions and distributes guidance pertaining to SDWA standards.

2.4 Clean Air Act (CAA)

The Clean Air Act (CAA), including the Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the requirements of the CAAA.

CAA requirements are discussed in more detail in Section 6.0 and Appendix A.3.

CAA Titles. The CAA consists of six sections, referred to as Titles, which direct EPA to establish national standards for ambient air quality. Titles I-VI regulations can be found in 40 CFR 50-95.

- **Title I - Air Pollution Prevention and Control.** Pursuant to Title I of the CAA, EPA has established national ambient air quality standards (NAAQSs) to limit levels of six **criteria pollutants**, including carbon monoxide, lead, nitrogen oxides, particulate matter (PM), ozone, and sulfur dioxide (40 CFR 50). Under Section 110 of the CAA, each state must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet federal air quality standards. The SIP must be approved by EPA, or EPA may promulgate a plan of its own. Once a SIP is approved, it may be enforced by both federal and state authorities (CAA Section 110, 42 U.S.C., Section 7410(a)(2)). Geographic areas that meet NAAQSs for a given pollutant are classified as attainment areas; those that do not

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meet NAAQSs are classified as nonattainment areas. Those areas that are classified as nonattainment must update their SIPs in order to improve air quality.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories (CAA Section 111). NSPSs are based on the pollution control technology available to that category of industrial source but allow the affected industries the flexibility to devise a cost-effective means of reducing emissions.

- **Title II - Emission Standards for Moving Sources.** Title II of the CAA (Section 201-250) pertains to mobile sources, such as cars, trucks, buses, and planes. It establishes allowable levels of automobile emissions and includes provisions for alternative fuels. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.
- **Title III - Air Toxics.** Under Title I, EPA establishes and enforces National Emissions Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title III further directed EPA to develop a list of sources that emit any of 188 HAPs listed under Section 112 of the CAA, and to develop regulations for these categories of sources. To date, EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on maximum achievable control technology (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.
- **Title IV - Acid Deposition Control.** Acid rain occurs when sulfur dioxide and nitrogen oxide emissions are released into the atmosphere and return to the earth in rain, fog, or snow. Title IV establishes a sulfur dioxide emissions program designed to reduce the formation of acid rain by requiring power plants and other utilities to reduce sulfur dioxide emissions. Reduction of sulfur dioxide releases will be obtained by granting certain sources limited emissions allowances. This program began in 1995 and set levels of sulfur dioxide releases below previous levels.
- **Title V - Permits.** Title V of the CAAA of 1990 created a permit program for all **major sources** (and certain other sources) regulated under the CAA. One purpose of the operating permit is to include, in one document, all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a state program is approved by EPA, permits will be issued and monitored by that state.
- **Title VI - Stratospheric Ozone.** Title VI is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restricting their use and distribution. Title VI requires EPA to list all regulated substances along with their ozone depletion potential, atmospheric lifetimes, and global warming potentials. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs), will be phased out entirely by the year 2000, while certain hydrochlorofluorocarbons

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(HCFCs) will be phased out by 2030. Title VI also requires EPA to publish a list of substitutes for Class I and II chemicals.

Risk Management Program. As required under Section 112(r) of the amended CAA, EPA has promulgated the Risk Management Program Rule. The rule's main goals are to **prevent accidental releases** of regulated substances and to reduce the severity of those releases that do occur by requiring facilities to develop risk management programs. The risk management programs must incorporate three elements: a hazard assessment, a prevention program, and an emergency response program. These programs are to be summarized in a risk management plan (RMP) that will be made available to state and local government agencies and the public. Besides helping facilities prevent accidents, the rule can improve the efficiency of work operations by ensuring that workers are trained in proper procedures and by using preventive maintenance to reduce equipment breakdowns.

Food processors may be subject to risk management planning requirements if they have one or more of the identified substances onsite above the threshold quantity. Ammonia is one of the identified substances.

If you have more than a threshold quantity of any of the **regulated substances** in a single process, you are required to comply with the regulation (40 CFR 68). EPA has currently established a list of 140 regulated substances that fall under these CAA regulations. These substances were published in the *Federal Register* on January 31, 1994; EPA amended the list by rule, published on December 18, 1997. EPA may amend the list in the future as needed. Covered facilities must comply with the rule **by June 21, 1999**. The RMPs will be available electronically to state and local governments and citizens to help them understand local chemical hazards and take steps to prevent accidents.

For more information on risk management planning, contacting the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810, or access EPA's Chemical Emergency Preparedness and Prevention Office Home Page at <http://www.epa.gov/swercepp/>.

For more information, see:

- Section 6.0 *How Do I Comply With Air Regulations?*
- 40 CFR 50-99: Air Programs
- 40 CFR 68: Chemical Accident Prevention Provisions
- Appendix A.3. *Summary of Principal Regulations Under the Clean Air Act.*

Examples of CAA Enforcement Provisions and Penalties

The 1990 Clean Air Act Amendments gave EPA additional enforcement authorities including administrative authorities and field-issued citations. Field-issued citations are those that are issued by a compliance inspector at the time of an inspection. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996 (see Section 2.11 for more information).

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- C Federal civil penalties: Failure to comply with an air operating permit, the State Implementation Plan (SIP) or a federal regulation may result in a civil judicial penalty of up to \$27,500 per day per violation. A field-issued citation may result in penalties up to \$5,000 per violation.
- C Federal criminal penalties: Knowing violation may result in criminal penalties including fines up to \$1,000,000 per day per violation and fifteen years imprisonment.

See Section 2.11.2 *Summary of Food Processing Cases in ECAARs from FY 1991 - 1997* for a description of CAA cases.

Note: EPA's Control Technology Center (919-541-0800) provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline (1-800-296-1996) provides general information about regulations promulgated under Title VI of the CAA, and EPA's RCRA/UST, Superfund and EPCRA Hotline (1-800-424-9346 or 703-412-9810) provides information concerning accidental release prevention under CAA Section 112(r). In addition, the Technology Transfer Network Bulletin Board System (modem access 919-541-5742) includes recent CAA rules, EPA guidance documents, and updates of EPA activities.

2.5 Emergency Planning And Community Right-To-Know Act (EPCRA)

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created EPCRA, also known as SARA Title III. This statute was designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by state and local governments. EPCRA required the establishment of state emergency response commissions (SERCs). SERCs are responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA requirements are discussed in more detail in Section 7.0 and Appendix A.4. CERCLA requirements are discussed in more detail in Section 10.0 and Appendix A.5.

EPCRA regulations establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA Section 302/303.** Requires facilities to notify the SERC (EPCRA Section 302) and LEPC (EPCRA Section 303) of the presence of any extremely hazardous substance (the list of such substances in 40 CFR 355, Appendices A and B) if it has such a substance in excess of the substance's threshold planning quantity.
- **EPCRA Section 304.** Requires the facility to notify the SERC and the LEPC in the event of an accidental release exceeding the reportable quantity of an EPCRA extremely hazardous substance or a CERCLA hazardous substance. Facilities are also required to notify the National Response Center at 1-800-424-8802 in the event of a release of a CERCLA hazardous substance.

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- **EPCRA Sections 311 and 312.** Require a facility at which a hazardous chemical [as defined by the Occupational Safety and Health Administration (OSHA)] or an EPCRA extremely hazardous substance is present in an amount exceeding a specified threshold to submit to the SERC, LEPC, and local fire department material safety data sheets (MSDSs) or lists of MSDSs and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.
- **EPCRA Section 313.** Commonly referred to as the Toxic Chemical Release Inventory (TRI), this program requires certain designated businesses to submit annual reports (known as Form Rs and Form As) on more than 600 EPCRA Section 313 chemicals and chemical categories. Facilities meeting the EPCRA Section 313 reporting criteria must report the annual releases and other waste management activities (routine and accidental) of EPCRA Section 313 chemicals to all environmental media. The reports are submitted to U.S. EPA and State or Tribal governments, on or before July 1, for activities in the previous calendar year. This information increases the public's knowledge or, and access to information on the presence of toxic chemicals in their communities.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

For more information, see:

- Section 7.0 *How Do I Comply With the Emergency Planning and Community Right-to-Know Act Requirements?*
- 40 CFR 350-372: Emergency Planning and Community Right-to-Know Information
- Appendix A.4. *Summary of Principal Regulations Under the Emergency Planning and Community Right-to-Know Act*

Examples of EPCRA Enforcement Provisions and Penalties

Examples of civil and criminal penalties under EPCRA are described below. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996. (See Section 2.11 for more information.)

- C Federal civil penalties: Failure to do the following may result in civil penalties of up to \$27,500 per day per violation: submit Forms Rs for all EPCRA 313 chemicals for which the facility exceeded the threshold; provide information in response to a request from the local emergency planning committee; report accidental releases to all appropriate authorities; provide all reporting information required; or notify the committee of any changes at the facility that affect the development of the emergency response plan.
- C Federal criminal penalties: Knowing violation may result in criminal penalties including fines up to \$25,000 and/or up to two years in prison.

See Section 2.11.2 *Summary of Food Processing Cases in ECAARs from FY 1991 - 1997* for a description of EPCRA cases.

Note: EPA's RCRA/UST, Superfund and EPCRA Hotline (1-800-424-9346 or 703-412-9810) provides information and distributes guidance regarding the emergency planning and community right-to-know regulations.

2.6 Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Hazardous waste requirements are discussed in more detail in Section 8.0 and Appendix A.6.

Subtitle D of RCRA and its implementing regulations basically apply to the management of solid, nonhazardous waste and its disposal in landfills. Subtitle D applies to your food processing facility because it prohibits open dumping of solid, nonhazardous wastes. A nonhazardous waste is defined as any garbage, refuse, or sludge from waste treatment plants, water treatment plants, or air pollution control equipment. Programs addressing the disposal of solid, nonhazardous wastes are developed and enforced at the state or local level. Contact your state for more information on proper disposal practices.

Regulations promulgated pursuant to **Subtitle C** of RCRA (40 CFR 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations or materials which exhibit a hazardous waste characteristic (ignitability, corrosivity, reactivity, or toxicity).

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and recordkeeping standards. Facilities that treat, store, or dispose of hazardous waste must obtain a permit, either from EPA or from a state agency which EPA has authorized to implement the permitting program. Subtitle C permits contain general facility standards such as contingency plans, emergency procedures, recordkeeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR 264 Subpart S and 264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Most RCRA requirements are not industry specific but apply to any company that generates, transports, treats, stores, or disposes of hazardous waste. Although RCRA is a federal statute, many states implement the RCRA program. Currently, EPA has delegated its authority to 46 states to implement various provisions of RCRA. UST programs are delegated to about half of the states. Important RCRA regulatory requirements include:

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- **Identification of Solid and Hazardous Wastes** (40 CFR 261) lays out the procedure every generator should follow to determine whether the material created is considered a solid waste, hazardous waste, or is exempt from regulation.

Food processors typically generate small amounts of hazardous waste. See Section 8.0 for more information.
- **Standards for Generators of Hazardous Waste** (40 CFR 262) establishes the responsibilities of hazardous waste generators including obtaining an identification (ID) number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and recordkeeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated per month) without obtaining a permit for being a treatment, storage, and disposal (TSD) facility.
- **Land Disposal Restrictions (LDRs)** (40 CFR 268) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs, materials must meet LDR treatment standards for hazardous constituents prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Land disposal units are defined in 40 CFR 264 and 265, Subparts K-N. Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.
- **Used Oil Management Standards** (40 CFR 279) impose management requirements affecting the storage, transportation, burning, processing, and re-refining of the used oil. For parties that merely generate used oil, regulations establish storage standards. For a party considered a used oil marketer (one who generates and sells off-specification used oil directly to a used oil burner), additional tracking and paperwork requirements must be satisfied, including registration form EPA 8700-12.
- **Containers** (40 CFR 264 and 265, Subpart I; 40 CFR 261.7) are one of the most commonly used and diverse forms of hazardous waste storage. There are two sets of regulations for containers: requirements that pertain to the management of hazardous waste containers (40 CFR 264/265, Subpart I) and the regulations governing residues of hazardous waste in empty containers (40 CFR 261.7).
- **Tanks** (40 CFR 265, Subpart J) are used widely for storage or accumulation of hazardous waste because they can accommodate huge volumes. Generators accumulating hazardous waste in tank systems are subject to the interim status provisions in 40 CFR 265, Subpart J.
- **Emissions - Tanks and Containers** (40 CFR 264 and 265, Subpart CC) used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities that store such waste, including generators operating under the 90-day accumulation rule.

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- **Storage Tanks - USTs** (40 CFR 280) containing petroleum and hazardous substances are regulated under RCRA, Subtitle I. Subtitle I regulations contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also establishes standards for upgrading existing tanks, that must be met by December 22, 1998.

Note: Aboveground storage tanks (ASTs) may be used to store materials, such as vegetable oils, used in food processing. ASTs are regulated under the CWA and OPA. Refer to Section 4.0 *How Do I Comply with Wastewater Discharge and Related Regulations?* for more information on ASTs.

For more information, see:

- Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?*
- 40 CFR 260-299: Hazardous Waste Management
- Appendix A.6. *Summary of Principal Regulations Under the Resource Conservation and Recovery Act.*

Examples of RCRA Enforcement Provisions and Penalties

General enforcement penalty information is presented below for the solid waste, hazardous waste, and underground storage tank categories of RCRA regulations. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996 (see Section 2.11 for more information).

Solid Waste

- Federal law does not establish specific penalties for civil or criminal violations of the solid waste program. Enforcement of the solid waste program relies on state law.

Hazardous Waste

Federal law for the hazardous waste management program has provisions for civil and criminal penalties.

- Federal civil penalties: Civil penalties may be up to \$27,500 per day of noncompliance per incident and the company's permit may be revoked.
- Federal criminal penalties: The criminal penalties apply to individuals within a company and are a maximum of two years (five years for specified violations) imprisonment and a maximum penalty of \$50,000 per day of noncompliance per incident.

Underground Storage Tanks

Failure to comply with UST requirements may result in the following types of civil penalties:

- c Federal civil penalties: Administrative penalties may be up to \$11,000 per violation per tank per day of noncompliance. Failure to comply with an enforcement order can result in civil judicial penalties of up to \$27,500 per day of noncompliance with the order.

See Section 2.11.2 *Summary of Food Processing Cases in ECAARs from FY 1991 - 1997* for a description of RCRA cases.

Note: EPA's RCRA/UST, Superfund and EPCRA Hotline (1-800-424-9346 or 703-412-9810) provides information and distributes guidance regarding all RCRA regulations.

2.7 Comprehensive Environmental Response, Compensation, And Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. SARA revised various sections of CERCLA, extended the taxing authority for Superfund and creating a free-standing law, SARA Title III, also known as EPCRA (discussed in Section 2.5).

Release Reporting. When there is a release of a CERCLA hazardous substance in an amount equal to or in excess of a certain quantity for that substance, CERCLA requires the person in charge of a vessel or facility to immediately notify the **National Response Center at 1-800-424-8802** (40 CFR 302, CERCLA 103(a)). See Section 7.0 for more information on EPCRA and CERCLA emergency release reporting requirements.

CERCLA release reporting requirements are discussed in more detail in Section 7.0, 10.0, and Appendix A.5.

Responses. EPA implements hazardous substance responses, known as remedial actions or removals, according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). While EPA generally takes remedial actions only at National Priorities List (NPL) sites, both EPA and states can act at other sites. The difference is that EPA can provide responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

For more information, see:

- Section 7.0 *How Do I Comply With the Emergency Planning and Community Right-to-Know Act Regulations?*

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- Section 10.0 *Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA and TSCA*
- 40 CFR 300: National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 302: Hazardous Substance Release Reporting Regulations
- Appendix A.5. *Summary of Principal Regulations Under the Comprehensive Environmental Response, Compensation, and Liability Act*

Examples of CERCLA Enforcement Provisions and Penalties

Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996 (see Section 2.11 for more information).

- C Federal civil penalties: Civil penalties of up to \$27,500 per day per violation for the first violation and a second violation can be as high as \$82,000 per day.
- C Federal criminal penalties: Persons in charge of a facility from which a hazardous substance is released and who violate CERCLA's notification requirements (i.e., fail to notify the required government agency or knowingly submit false information) are subject to penalties under Title 18 or imprisonment for up to three years, or both. Persons who knowingly fail to notify EPA of hazardous substance management activities are subject to penalties up to \$10,000 or imprisonment for up to one year.

Note: EPA's RCRA/UST, Superfund and EPCRA Hotline (1-800-424-9346 or 703-412-9810) provides information and references guidance pertaining to the Superfund program.

2.8 Toxic Substances Control Act (TSCA)

Under TSCA, EPA collects data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk, and the standards may apply at any point during a chemical's life cycle. Drugs, cosmetics, foods, food additives, pesticides, and nuclear materials are **exempt from TSCA** and are subject to control under other federal statutes (e.g., foods and food additives are under the purview of the Federal Food, Drug and Cosmetics Act (FFDCA) administered by the FDA. In order for a food or food additive to be exempt, however, it must meet the definition contained in the FFDCA (21 USC 321 et seq.), or related statutes such as the Poultry Products Inspection Act and the Federal Meat Inspection Act. If the food or food additive does not meet the definition, the substance may then be regulated under TSCA and is subject to all the requirements of TSCA including testing, premanufacture notice, reporting and recordkeeping, export notification, and import certification. For example, vegetable oils and their derivatives from vegetable processing that are used as an ingredient in lubricants, paints, inks, fuels, plastics, solvents and a variety of other industrial products are subject to all of TSCA's requirements.

TSCA requirements are discussed in more detail in Section 10.4.

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Section 8 of TSCA authorizes EPA to require chemical manufacturers, importers, and processors to keep records and report certain information. This includes reporting as part of the inventory update (Section 8(a)); maintaining and reporting allegations of significant adverse reactions (Section 8(c)); reporting health and safety studies (Section 8(d)); and reporting information on a substance presenting a substantial risk of injury to health or the environment (Section 8(e)). Additional reporting requirements for exports and imports are found in TSCA Sections 12 and 13, respectively.

The TSCA Chemical Substances Inventory is a compilation of the names of all existing chemical substances and currently contains over 70,000 existing chemicals. Information in the inventory is updated every four years (Inventory Update). If manufacturing or importing a chemical substance that is not already on the inventory (and has not been excluded by TSCA), a facility must submit a premanufacture notice (PMN) prior to manufacture or importation (TSCA Section 5).

Food processors manufacturing substances, such as vegetable oil and animal fats, that are used for non-food purposes (e.g., in inks) must comply with the Inventory Update rule.

For more information, see:

- Section 10.0 *Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA and TSCA*
- 40 CFR 704: Reporting and Recordkeeping Requirements
- 40 CFR 707: Chemical Imports and Exports
- 40 CFR 710: TSCA Chemical Inventory
- 40 CFR 712: Chemical Information Rules
- 40 CFR 716: Health and Safety Data Reporting
- 40 CFR 717: Records and Reports of Allegations that Chemical Substances Cause Significant Adverse Reactions to Health or the Environment
- 40 CFR 720: Premanufacture Notice
- 40 CFR 723: Premanufacture Notification Exemptions
- 40 CFR 721: Significant New Uses of Chemical Substances
- 40 CFR 750: Procedures for Rulemaking Under Section 6 of TSCA
- 40 CFR 790: Test Rule Development and Exemption Procedures
- 40 CFR 791: Data Reimbursement
- 40 CFR 792: Good Laboratory Practice Standards.

Examples of TSCA Enforcement Provisions and Penalties

TSCA Section 11 gives EPA broad authority to inspect establishments which hold chemicals and to subpoena information for enforcement of the Act. TSCA Sections 15, 16, and 17, respectively, list prohibited acts, their attendant civil and criminal penalties, and the jurisdiction of the federal district court for specific enforcement and seizure. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996 (see Section 2.11 for more information).

- C Federal civil penalties: Civil penalties of up to \$27,500 per day per violation.
- C Federal criminal penalties: Criminal penalties may be up to \$25,000 per day per violation and/or imprisonment for up to one year.

Note: EPA's TSCA Assistance Information Service (202-554-1404) provides information and distributes guidance pertaining to TSCA standards.

2.9 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) primarily regulates the manufacture and registration of pesticides (40 CFR 152 and 156), but important requirements also exist for pesticides **users**.

Pesticide handling requirements are discussed in more detail in Section 10.3.

FIFRA requires that all pesticides be registered for every intended use, and that labels containing instructions for proper storage, use, and disposal accompany each pesticide marketed. It is considered illegal to use a pesticide in a manner inconsistent with its label. The "label is the law." Under FIFRA, pesticides must be classified for either general use or restricted use. EPA classifies some pesticides as restricted use because they have high toxicity or pose particular environmental hazards. Restricted use pesticides may be applied only by certified pesticide applicators. Pesticide labels will state clearly whether a particular pesticide is restricted use only. For pesticides that are not restricted use, food processing facilities may purchase, store, apply, and dispose of the pesticides. Food processors must comply with all FIFRA requirements relating to these activities.

Food Quality Protection Act

The Food Quality Protection Act (FQPA), passed in 1996, was a comprehensive overhaul of the laws that regulate pesticides in food: FIFRA and the Federal Food, Drug and Cosmetics Act (FFDCA). The new law amends both major pesticide laws to establish a more consistent, protective regulatory scheme. The new **FFDCA provisions** include establishing a health-based safety standard for pesticide residues in food; adding special provisions for infants and children; placing limitations on benefits considerations; reviewing all existing tolerances within ten years; incorporating endocrine testing; enhancing enforcement of pesticide residue standards by allowing the FDA to impose civil penalties for tolerance violations; increasing right to know activities; and requiring uniformity of tolerances among states (unless the state petitions EPA for an exception, based on state-specific situations). The new **FIFRA provisions** include a pesticide reregistration program, pesticide registration renewal, registration of safer pesticides, minor use pesticide program, and an antimicrobial pesticide program.

FQPA requirements are discussed in more detail in Section 10.3.

For more information, see:

- Section 10.0 *Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA and TSCA*
- 40 CFR 150: FIFRA
- 40 CFR 165: Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticides Containers.

Examples of FIFRA Enforcement Provisions and Penalties

FIFRA. Civil penalty amounts presented here also reflect the inflation adjustment authorized by Congress under the Debt Collection Improvement Act of 1996 (see Section 2.11 for more information).

- Ⓒ Federal civil penalties: Commercial applicators may be fined up to \$5,500 for each offense under FIFRA; private applicators may be fined \$550 for the first offense and up to \$1,000 for each subsequent offense.
- Ⓒ Federal criminal penalties: Commercial applicators may be fined up to \$25,000 or up to one year in prison, or both, for knowing violations. Private applicators may be fined up to \$1,000 or thirty days in prison, or both, for knowing violations.

Note: EPA's National Pesticides Telecommunications Network (NPTN) at 1-800-858-7378 provides pesticide information.

2.10 Other Federal Regulations

This subsection highlights two other environmental laws that may affect food processors, particularly in construction projects for new facilities or modifications of existing facilities. These include the Coastal Zone Management Act (CZMA) and the Endangered Species Act (ESA). You should be aware of and comply with the requirements of these regulations as described below. For purposes of this guide, additional information about these statutes is incorporated in Section 4.7.2. *Construction and Plant Modification Activities*.

2.10.1 Coastal Zone Management Act (CZMA)

The CZMA, enacted in 1972 and administered by the National Oceanic and Atmospheric Administration (NOAA), encourages states to preserve, protect, develop, and where possible, restore or enhance valuable natural coastal resources such as wetland, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats.

A unique feature of the CZMA is that participation by states is voluntary. The CZMA enables states to develop programs and plans that meet their specific needs, within the context of their

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governmental structures. In addition, CZMA gives states the authority to review federal projects and projects receiving federal licenses and permits to ensure they abide by state laws, regulations, and policies. To encourage states to participate, the act makes federal financial assistance available to any coastal state or territory, including those on the Great Lakes, that is willing to develop and implement a comprehensive coastal management program (CMP). In addition to resource protection, the CZMA specifies that coastal states may manage coastal development. A state with an approved program can deny or restrict any development that is inconsistent with its CMP.

Under the 1990 CZMA Reauthorization Amendments, states must issue management measures for certain categories of runoff and erosion; evaluate nonpoint sources; and identify coastal areas that would be affected negatively by specified land uses. The 1990 Amendments mandate each coastal state to implement a Coastal Zone Nonpoint Pollution Control Program as part of each state's CMP. For example, under the program, pesticide application is subject to regulation if pesticide runoff from nonpoint sources reaches coastal waters.

Consequently, food processors who use pesticides and live in coastal states should determine whether their land is part of the coastal zone, or if their pesticide application violates their state's applicable CMP.

States may add additional requirements to NPDES storm water permits in order to meet coastal zone nonpoint pollution control program goals. See Section 4.3 for more information.

The CZMA also was amended by the Coastal Zone Protection Act of 1996. This act amends the CZMA to change allowable uses and match requirements for certain grant funds and to change the process for consistency appeals.

For more information, see:

- Section 4.3 *Am I A Direct Discharger?*
- 16 U.S.C. Sections 1451-1464
- 15 CFR 921-932.

2.10.2 Endangered Species Act (ESA)

The Endangered Species Act (ESA), administered by the U.S. Department of Interior's Fish and Wildlife Service (USFWS) and the Department of Commerce's National Marine Fisheries Service (NMFS), establishes a program for the conservation of endangered and threatened species and the habitats in which they are found. The ESA affords broad protection for species of fish, wildlife, and plants that are listed as endangered and threatened in the U.S. and elsewhere. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. Anyone can petition the USFWS to list a species. The ESA strives to conserve ecosystems both through federal action and by encouraging the establishment of state programs. State laws or regulations may be more, but not less, restrictive than the federal ESA or its regulations.

ESA requirements that may affect food processors are discussed in more detail in Section 4.7.2.

The term “take” includes harassing, harming, hunting, killing, capturing, and collecting.

The ESA prohibits the taking, possession, import, export, sale, and transport of any listed fish or wildlife species. It also is unlawful to maliciously damage, destroy, or remove from any area under federal jurisdiction, damage or remove from any other area in knowing violation of state law, import, export, or trade

any listed plant species. These prohibitions do not apply to species legally held in captivity or a controlled environment. The USFWS or NMFS, by permit, also may allow a taking incidental to an otherwise lawful activity if the applicant submits, and the USFWS or NMFS approves, a conservation plan addressing the impact of the taking, mitigation measures, funding, and alternative actions considered.

Persons engaged in, or planning to engage in, activities such as construction or plant modification, must be aware if any endangered or threatened species exist on the property involved or if the property is considered part of a listed species' critical habitat. If neither is the case, the ESA does not apply. However, if the action will “take” a species or degrade critical habitat, some form of mitigating action must be taken to prevent harming the species.

For more information, see:

- Section 4.7.2 *Construction and Plant Modification Activities*
- 16 U.S.C. Sections 1531-1544
- 50 CFR 10, 13, 14, 17, and 23.

2.11 Summary Of The Enforcement Process and Selected Cases

2.11.1 Overview of Enforcement

Some of the statute-specific enforcement authorities that Congress gave EPA are described earlier in this section. To provide a context for those examples, the following briefly describes the roles of EPA and the states in environmental enforcement, particularly under delegated or approved state programs, and the general types of enforcement responses available to EPA. Citizen suit authority also is discussed briefly.

Environmental enforcement is a comprehensive program involving federal, state, and local governments.

Federal Government - Roles of EPA and DOJ

EPA leads the federal government's environmental enforcement efforts using the latest law enforcement techniques and drawing upon the specialized abilities of other federal agencies. EPA headquarters, located in Washington, D.C., includes the Office of Enforcement and Compliance Assurance (OECA) which manages the Agency's enforcement and litigation program. Ten EPA regional offices, located in cities such as Seattle, Atlanta, San Francisco, and Philadelphia, conduct most of the day-to-day enforcement activities of the Agency. Where a

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state has been approved by EPA to implement a program, the EPA regional office oversees the state's performance to assure consistency with the federal law (see below). In unapproved states, the EPA regional office administers the program.

OECA includes the National Enforcement Investigations Center (NEIC) in Denver, and a Criminal Investigation Division (CID), headquartered in Washington, D.C., with field offices in the ten EPA regions as well as other locations around the country. NEIC provides technical support for EPA's civil and criminal cases. CID is the only federal law enforcement agency created for the purpose of investigating environmental crimes, although environmental crimes sometimes are investigated by the FBI and other federal agencies.

The U.S. Department of Justice (DOJ) plays a crucial role in EPA's enforcement activities. When EPA wishes to prosecute a violator in the U.S. court system, EPA refers the case to DOJ. DOJ attorneys, who specialize in environmental litigation, consider EPA's recommendations and make the final decision of whether or not to file the case in federal court. When the case goes to court, DOJ represents EPA in court, though EPA's legal and technical staff remain actively involved in the case. Like EPA, DOJ has a field organization -- the U.S. Attorneys; however, its civil environmental cases are handled by mostly DOJ headquarters attorneys.

State Government - Definition of Delegated or Approved Programs

Virtually every federal environmental law allows state governments to develop programs for implementing the federal law in their states. When a state submits a complete application and EPA has determined that the state program meets the federal requirements, EPA approves the state program. Depending on which federal statute, such programs are called "delegated," "authorized," "approved" or "primacy" programs. After EPA approves a program, the state applies the national standards and regulations by issuing and enforcing its own rules and permits. Many of EPA's statutes allow Native American Tribal Governments to develop programs for implementing the federal laws on Tribal lands, by means similar to EPA's process for delegating programs to states. As a matter of policy, EPA has extended this option to the other statutes that do not explicitly provide for delegation to Native American Tribal Governments. Hence, the potential exists to delegate to Native American Tribal Governments any program that EPA may delegate to states. In practice however, the number of Tribal Governments with delegated responsibilities is small. If you do operate a food processing facility on Tribal lands, you should check with the EPA's Regional Office and/or the Tribal Government to learn whether EPA has approved any Tribal Government environmental programs.

Under this system of delegated or approved programs, state governments carry out the vast majority of environmental enforcement actions. State governments conduct about 80-90 percent of the inspections and approximately 70 percent of the national total of the enforcement actions taken by the delegated clean air, clean water, and hazardous waste programs.

Enforcement at the state level is carried out by a number of different agencies, including the state environmental agencies, state Attorney General, and district attorneys. State environmental agencies usually have responsibility for permits, inspections, and certain types of enforcement actions. In many instances, pesticide laws are enforced by state Departments of Agriculture. In some states, a single environmental agency handles all EPA programs, while in

others, several agencies divide the responsibilities. States also may delegate some of the activities to county or city governments, such as the local health department.

The state Attorney General is the chief law enforcement official for the state. The Attorney General has responsibility for suing violators, at the request of state environmental agencies. District attorneys also may have responsibility for suing violators, and typically they represent municipalities. In some states, the District Attorney's approval is required for enforcement suits to be filed by the state Attorney General.

State/Federal Enforcement Partnerships

EPA strives to work out an effective enforcement partnership with each state. This is accomplished by establishing state/EPA enforcement partnership agreements that cover delegated programs and involve the appropriate state agencies. These agreements usually define the characteristics of a good enforcement program using the same criteria by which EPA judges its own performance.

The agreements also spell out the conditions under which EPA will step in and take enforcement action in a delegated or an approved state program. Common circumstances for such a step include the following:

- C If the state requests federal action;
- C If the state's enforcement response is not timely and appropriate (a set of criteria has been developed by EPA and the states for each major program);
- C If the case involves national precedents; or
- C If there is a violation of an EPA order or consent decree (settlement agreement).

Types of Enforcement Responses

Enforcement actions are tools designed to discourage companies and individuals in the regulated community from breaking the law, and to compel them to **return to compliance** when they do break the law. EPA has a range of options when contemplating an enforcement response against a violator. These options differ from one law to another, and include the following:

- C **Informal response.** Administrative actions that are advisory in nature, such as a phone call, notice of noncompliance or a warning letter. In these actions, EPA advises the manager of a facility what violation was found, what corrective action should be taken, and by what date. Informal responses carry no penalty or power to compel actions, but if they are ignored, they can lead to more severe actions.
- C **Formal administrative responses.** Legal orders that are independently enforceable and which may require the recipient to take some corrective or remedial action within a specified period of time, refrain from certain behavior, or be in future compliance. (Such an order may or may not have a penalty attached.) These administrative actions are strong enforcement tools. If a person violates an order, EPA may go to U.S. federal court to force compliance. Administrative actions are handled under EPA's internal administrative litigation system, which is comparable to any court system except that administrative law judges (ALJs) preside.

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- C **Civil judicial responses.** Formal lawsuits brought in U.S. federal court by DOJ at EPA's request. They normally are used against the more serious or recalcitrant violators of environmental laws or to seek prompt correction of imminent hazards. Civil judicial cases generally result in penalties and court orders requiring correction of the violation and specific actions to prevent future violations.
- C **Criminal judicial responses.** Response used when a person or company has knowingly violated the law. In a criminal case, DOJ prosecutes an alleged violator in federal court, seeking criminal sanctions including fines and imprisonment. Criminal actions are often used to respond to flagrant, intentional disregard for environmental laws (such as operating secret by-pass pipes to discharge untreated wastewater and deliberate falsification of reports or records).

In many enforcement actions, EPA seeks both a remedy and a penalty. The remedy includes returning the violating facility to compliance and sometimes other remedial actions, as described below.

- C **Compliance.** The violator will be required to comply with the law. If the violation has not already been corrected, the violator usually is placed under a court-ordered schedule, with severe penalties for failure to comply with the order.
- C **Benefit projects.** In some cases, the violator is permitted to carry out a supplemental environmental project (SEP) that will yield environmental benefits. These projects may partly offset the penalty and may mitigate the harmful effects of the violation.
- C **Penalties.** The violator is required to pay a cash penalty (in criminal cases, a fine) that is not tax deductible. The penalty includes sanctions intended to deter the violator from falling into noncompliance again and to deter others from similar violations.¹
- C **Imprisonment.** In criminal cases, the violator may be sentenced to jail or placed on probation.
- C **Contractor listing.** A facility that has violated the CWA or CAA may be placed on EPA's List of Violating Facilities. Listed facilities are not eligible to receive federal contracts, grants, or loans from EPA or any other federal agency. Facilities that commit criminal violations of other environmental statutes are subject to possible

¹ **Civil Monetary Penalty Inflation Adjustment Rule.** This new rule (January 30, 1997) and the associated policy modified all of EPA's existing civil penalty policies by increasing the **gravity** component for civil monetary penalties by ten percent. EPA's action was based on the Debt Collection Improvement Act (DCIA) of 1996 that Congress enacted to restore the deterrent effect of federal civil penalties, eroded by inflation over the years. The law requires each federal agency to adjust its civil monetary penalties in accordance with a specified formula. EPA is required to review and adjust these amounts every four years. EPA's *Civil Monetary Penalty Inflation Adjustment Rule*, codified in 40 CFR 19, *Adjustment of Civil Penalties for Inflation*, increased **all 65** of the Agency's civil penalty provisions (with the exception of the 1996 Safe Drinking Water Act penalty provisions) by ten percent -- the maximum that Congress allowed for the first adjustment due to inflation. EPA's Office of Enforcement and Compliance Assurance (OECA) also issued a new penalty policy, *Modification to EPA Penalty Policies to Implement the Civil Monetary Penalty Inflation Rule* (May 9, 1997) See 40 CFR 19.4, Table 1, for a complete list of all EPA's civil monetary penalty authorities and amounts, or see the 1997 policy and related materials on OECA's home page at <http://www.epa.gov/oeca/>.

suspension and/or debarment from receiving or entering into EPA or other federal agency contracts.

Citizen Suit Provisions

The first citizen suit provision appeared in 1970, when Congress enacted the CAA. Specifically, this provision allowed citizens to sue polluters who violated certain requirements of the CAA and to sue EPA if it failed to carry out a non-discretionary duty set forth in the Act. Since that time, Congress has incorporated citizen suit provisions into many, but not all, federal environmental statutes. Although these provisions vary from statute to statute, such provisions generally allow citizen groups or individuals to file actions in federal district court against a facility to correct violations or collect fines and penalties.

2.11.2 Summary of Food Processing Cases in ECAARs from FY 1991-1997

For the past several years, EPA has published annual reports, the *Enforcement and Compliance Assurance Accomplishments Reports (ECAARs)*, on the accomplishments of the environmental enforcement and compliance assurance program. Although the organization of these reports has changed over the years, each report contains narrative descriptions of significant administrative, civil judicial and criminal cases that were either taken, developed, and/or settled by EPA and the states.

Most of the cases in each report reflect those that have been concluded by some type of settlement agreement, either administrative or civil judicial, or by court order. In a few instances the same case may appear in both an earlier and a later report, as it moves from the stage of being filed to being concluded. The conclusion might be a consent agreement that was negotiated over more than one year or a court order following a trial. In a criminal case, the sentencing of a convicted defendant(s) may be reported in the next year's report. Because the same case may appear in more than one report, a small amount of double counting results.

This summary is based on **78 cases** selected from all cases described in the ECAARs for fiscal years (FYs) 1991-1997. These cases were chosen on the basis of the facility name, description of the type of business operation, or, in some instances, on the listed SIC Code. It's important to note that the cases described in each report **do not necessarily reflect all** of the cases affecting food processors in that particular fiscal year.

CWA Cases. More than one third of all the 78 ECAAR-reported cases over the seven year period involved violations under the CWA. Examples of violations include the following: exceeding NPDES discharge limits (BOD, TSS, temperature, pH, phosphorus, oil and grease); exceeding indirect discharge limits (BOD, ammonia); interference and pass through at a POTW; and illegal discharges to surface waters (beer, ammonia, blood wastes; groundwater contaminated with solvents). These cases resulted in civil penalties ranging from a low of \$14,000 to a high of \$12.6 million.

Several cases involved criminal acts, including the following: conspiracy to violate the CWA; falsifying discharge monitoring reports (DMRs) sent to EPA or the state; negligently or knowingly

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discharging pollutants without a permit; operating a secret by-pass that resulted in discharge of untreated wastewater; and other acts. These cases resulted in criminal fines for the companies and/or the individuals involved. In addition, convicted individuals were sentenced either to incarceration in federal prison followed by a term of supervised release, or to a combination of in-home incarceration and community service.

CAA Cases. About one sixth of the 78 ECAAR-reported cases in the seven year period involved violations of the CAA. Examples of violations include: exceeding limits on boiler emissions (particulates); opacity; exceeding limits on volatile organic compound (VOC) emissions (ethanol); asbestos demolition and removal; prevention of significant deterioration (PSD) violations such as constructing of a major source without a permit; and violations of NSPS requirements. These cases resulted in civil penalties ranging from a low of \$30,000 (opacity violations) to a high of \$385,000 (VOC violations).

One criminal case involved illegal removal and release of asbestos to the air and resulted in a \$350,000 fine for a food processor.

EPCRA Cases. Slightly less than one third of the 78 ECAAR-reported cases involved violations of EPCRA. On average, two cases were reported each fiscal year, until the FY 1997 EPCRA Section 312 Food Processing Sector Initiative which resulted in ten cases. Examples of violations include: failure to submit TRI Form Rs (ammonia, sulfuric acid, hydrochloric acid, and/or carbon dioxide); failure to submit material safety data sheets (MSDSs) to LEPCs; failure to submit Tier I/Tier II forms; and failure to report emergency releases of anhydrous ammonia to state and local authorities. Failure to report these same release to EPA was a violation of CERCLA. Therefore, several companies had violations under both EPCRA and CERCLA.

Penalties in the EPCRA cases ranged from a low of \$2,000 (under the FY 1997 EPCRA Section 312 Food Processing Sector Initiative) to a high of about \$73,000. The penalties in the combined EPCRA/CERCLA cases ranged from a low of \$41,000 to a high of \$180,830.

RCRA Cases. Only four of the 78 ECAAR-reported cases in the seven year period involved RCRA. Examples of violations include: violation of the used oil requirements; failure to make a hazardous waste determination; and accumulating hazardous waste onsite in excess of 90 days. Penalties in these cases ranged from \$250,000 to \$700,000.

NOTICE

This document provides guidance to assist regulated entities to understand their obligations under environmental laws; however, for a complete understanding of all legal requirements, the reader must refer to applicable federal and state statutes and regulations. This guide is a compliance assistance tool only, and it neither changes nor replaces any applicable legal requirements, nor does it create any rights or benefits for anyone. This guide also describes in a summary fashion the roles and activities of federal and state agencies; however, the guidance does not limit their otherwise lawful prerogatives, and the agencies may act at variance with it, based on specific circumstances. This guidance may be revised without prior notice. Mention of trade names or commercial products in this document, or in associated references, does not constitute an endorsement or recommendation for use.

PREFACE AND ACKNOWLEDGMENTS

Preface

As part of its mission to communicate environmental regulatory responsibilities to business and industry, the U.S. Environmental Protection Agency's Office of Compliance (OC) has prepared this guide to the major federal environmental statutes and regulations that may affect food processors. The guide provides an overview of the major requirements that the U.S. EPA administers. Appendices A, B and C, respectively, contain portions of the Code of Federal Regulations (CFR) in an easy to understand format, provide organizations and hotline resources for compliance assistance, and list numerous references used in developing this guide. The guide also contains general information about pollution prevention that may enable your facility to go beyond compliance by achieving greater reductions in emissions and/or wastes.

The target audience for the guide is the plant-level manager and/or staff responsible for environmental compliance at a facility. Others who may find value in this guide include the following: environmental managers at the corporate level; state and local compliance assistance programs; trade associations; and environmental consultants to the industry. Federal, state, and local regulators and/or compliance inspectors may also find this guide to be useful in offering a broad perspective on U.S. EPA's requirements and the food processing industry.

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ACRONYMS

ABC	Activity-Based Costing
ACP	Area Contingency Plan
AFFI	American Frozen Food Institute
AFO	Animal Feeding Operation
AHERA	Asbestos Hazard Emergency Response Act
ALJ	Administrative Law Judge
AMI	American Meat Institute
AO	Administrative Order
AST	Aboveground Storage Tank
BACT	Best Available Control Technology
BIFs	Boilers and Industrial Furnaces
BOD	Biochemical Oxygen Demand
BMP	Best Management Practice
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring
CCSMB	Chemical, Commercial Services, and Municipal Branch
CDC	Center for Disease Control
CEPPO	Chemical Emergency Preparedness and Prevention Office
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulation
CH ₄	Methane
CID	Criminal Investigation Division
CMP	Coastal Management Program
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DMR	Discharge Monitoring Report
DOE	Department of Energy
DOI	Department of the Interior
DOJ	Department of Justice
DOT	Department of Transportation
ECAAR	Enforcement and Compliance Assurance Accomplishments Report
ECOS	Environmental Council of the States
EHS	Extremely Hazardous Substance
ELP	Environmental Leadership Program
EMS	Environmental Management System
EPCRA	Emergency Planning and Community Right-to-Know Act
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Endangered Species Act
FBI	Federal Bureau of Investigations
FDA	Food and Drug Administration

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FEPCA	Federal Environmental Pesticide Control Act
FESOP	Federally Enforceable State Operating Permit
FFDCA	Federal Food, Drug and Cosmetic Act
FIEC	Food Industry Environmental Council
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMC	Food Manufacturing Coalition
FQPA	Food Quality Protection Act
FRP	Facility Response Plan
FSIS	Food Safety Inspection Service
FWPCA	Federal Water Pollution Control Act
FY	Fiscal Year
HACCP	Hazard Analysis and Critical Control Point
HAP	Hazardous Air Pollutant
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCFC	Hydrochlorofluorocarbon
HCS	Hazard Communication Standard
HSWA	Hazardous Solid Waste Amendments
ICCR	Industrial Combustion Coordinated Rulemaking
ID	Identification Number
ISO	International Organization of Standardization
LAER	Lowest Achievable Emission Rate
LDR	Land Disposal Restriction
LEPC	Local Emergency Planning Committee
LQG	Large Quantity Generator
MACT	Maximum Achievable Control Technology
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MEK	Methyl Ethyl Ketone
MSDS	Material Safety Data Sheet
MSGP	Multi-Sector General Permit
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industrial Classification System
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEIC	National Enforcement Investigations Center
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NFFPA	National Food Processors Association
NICE ³	National Industrial Competitiveness through Energy, Environment, and Economics
NMFS	National Marine Fisheries Service
NO _x	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Inspection
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulation
NPL	National Priority List
NPTN	Pesticides Telecommunications Network
NRC	National Response Center
NSDWR	National Secondary Drinking Water Regulation
NSPS	New Source Performance Standard

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NSR	New Source Review
NTIS	National Technical Information Service
OC	Office of Compliance
OECA	Office of Environmental Compliance and Assurance
O&G	Oil and Grease
OPA	Oil Pollution Act
OPC	Oil Program Center
OPP	Office of Pesticide Programs
OPPT	Office of Prevention, Pesticides, and Toxics
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OTAG	Ozone Transport Assessment Group
P2	Pollution Prevention
Pb	Lead
PCB	Polychlorinated biphenyl
PCS	Permit Compliance System
PESP	Pesticide Environmental Stewardship Program
PM	Particulate Matter
PMN	Premanufacture Notice
POTW	Publicly Owned Treatment Work
PREP	National Preparedness for Response Exercise Program
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management
PTI	Permit to Install
PWS	Public Water System
PWSS	Public Water Supply Supervision
RA	Regional Administrator
RACT	Reasonably Available Control Technology
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RQ	Reportable Quantity
RUP	Restricted Use Pesticide
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SEP	Supplemental Environmental Project
SERC	State Emergency Response Commission
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SNAP	Significant New Alternatives Policy
SOx	Sulfur Oxide
SO ₂	Sulfur Dioxide
SPCC	Spill Prevention, Control and Countermeasure
SQG	Small Quantity Generator
SRF	State Revolving Fund
SWPPP	Storm Water Pollution Prevention Plan
SWTR	Surface Water Treatment Rule
tpy	Tons per year
TCLP	Toxicity Characteristic Leaching Procedure
TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TPQ	Threshold Planning Quantity

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TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal facility
TSS	Total Suspended Solids
TT	Treatment Technique
TTN	Technology Transfer Network
UIC	Underground Injection Control
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDHHS	U.S. Department of Human and Health Services
USDW	Underground Source of Drinking Water
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WPS	Worker Protection Standard

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3. UNDERSTANDING THE PROCESS: INPUTS, OUTPUTS, AND APPLICABLE FEDERAL ENVIRONMENTAL REGULATIONS

3.1 Introduction

The section provides you with an approach for analyzing your facility's operations to identify the wastes generated and how those wastes are regulated.

Remember that this guide discusses the most significant, but not all, of the federal environmental requirements that apply to your food processing facility. State and local requirements are not addressed.

First, this section leads you through an examination of the activities at a typical food processing facility, including process and ancillary operations. It will (1) describe the inputs and the waste outputs generated during process and ancillary operations, and (2) identify the federal environmental requirements associated with the waste outputs. To help you visualize the steps, this section includes figures (generic Figures 3-1a and 3-1b) that show typical process and ancillary operations for the food processing industry, and their inputs and regulated waste outputs.

After reviewing this generic model of a food processing operation, the next example will show you a process map (Figure 3-2) for a facility in Standard Industrial Classification (SIC) Code 203, including typical inputs, regulated outputs, and the applicable environmental statute.

The final part of this section provides you with an opportunity to examine your facility's process and ancillary operations, identify inputs and waste outputs, and determine how they are regulated. A blank waste analysis process map (Figure 3-3) and a blank waste analysis table (Table 3-3) are provided to help you in this activity.

3.2 Examining Process and Ancillary Operations

The process map of your food processing operation, as well as your ancillary operations, are most likely very similar to those shown in the following figures:

Figure 3-1a. Generic Process Map With Examples of Regulated Outputs

Figure 3-1b. Selected Ancillary Operations with Examples of Regulated Outputs.

As shown in these figures, you will find that your process and ancillary operations are comprised of various inputs and associated outputs of waste. Inputs, which can range from raw ingredients to hazardous materials (see Section 3.2.1), and waste outputs vary greatly depending on type(s) of food products being produced. The applicable environmental statute for each type of waste output is indicated in parentheses on generic Figures 3-1a and 3-1b. Sections 3.2.1 and 3.2.2, respectively, discuss inputs and outputs in greater detail.

3.2.1 Inputs

As shown in generic **Figures 3-1a and 3-1b**, inputs go into every step of the process and ancillary operations. Inputs can consist of a variety of materials, including raw products, chemicals, water, paper, ink, steam, etc. The inputs to each operation will vary depending on the type of facility and product(s) being produced.

Hazardous Materials. To meet your input needs, your food processing facility may store and use many types of hazardous or toxic materials in your daily operations including, but not limited to, oils, chemicals, paints, pesticides, and fuels. Many of these materials may be regulated because of their hazardous or toxic nature. Please note that the term “materials” is not an EPA regulatory term, but a broad term selected for purposes of this discussion.

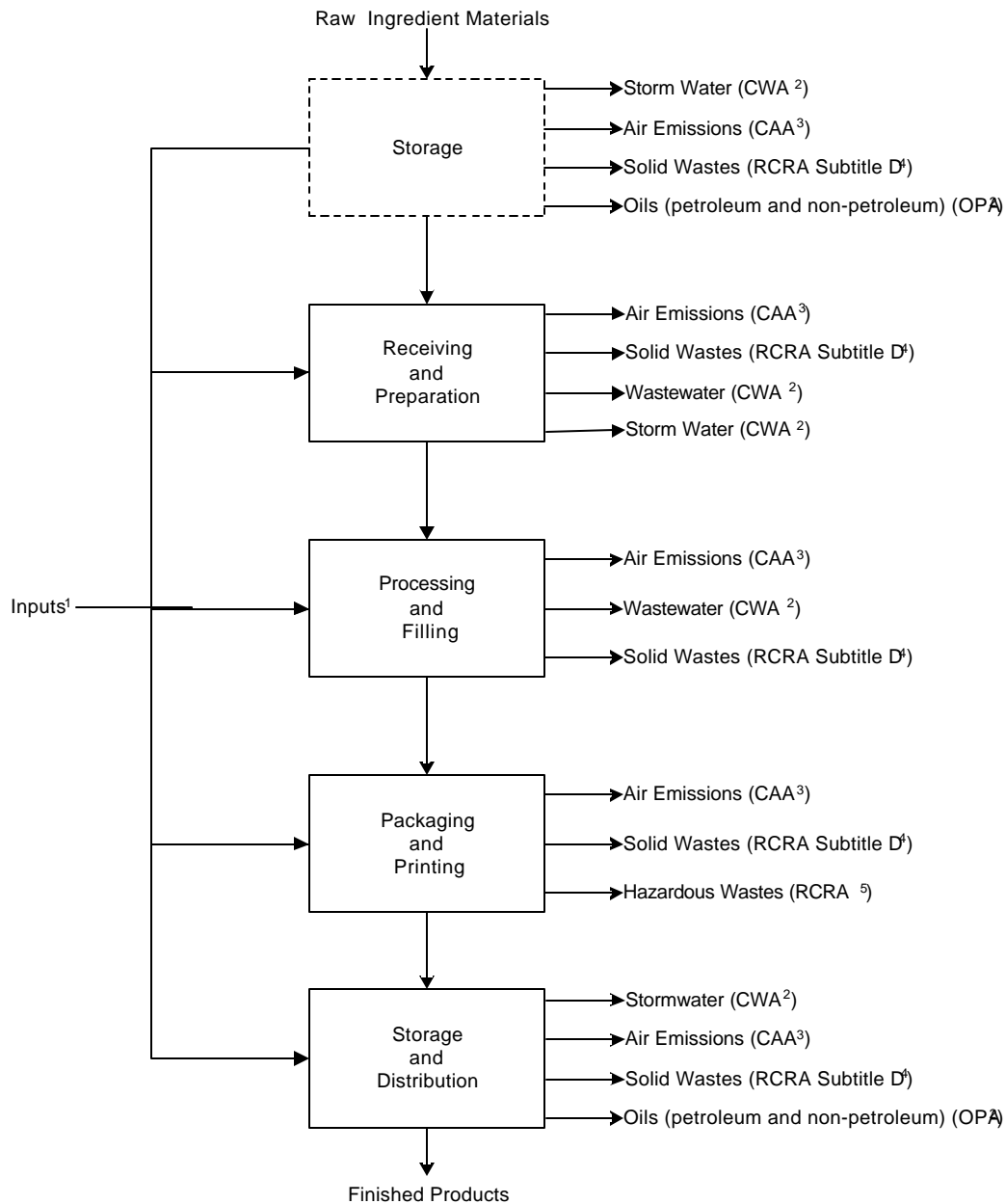
EPA and other federal regulations use various terms to denote hazardous or toxic materials. Examples of several terms used to denote these types of materials include the following:

- C EPA refers to regulated materials by terms such as “hazardous substances” and “extremely hazardous substances” under the Emergency Planning and Community Right-to-Know Act (EPCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Lists of these substances can be found in the EPCRA/CERCLA regulations at 40 CFR 302, Table 302.4 and 355, respectively. Such regulated materials do not have to be waste outputs to be covered under these regulations. In fact, such materials may be inputs to your process or ancillary operations.
- C A “hazardous material” is defined by the U.S. Department of Transportation (DOT) as a substance or material...capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. For DOT, this term includes hazardous and extremely hazardous substances as defined in CERCLA/EPCRA, hazardous wastes as defined in Resource Conservation and Recovery Act (RCRA), marine pollutants, and elevated temperature materials.

For some types of hazardous or toxic materials, EPA regulates storage and how you are to report your use of them. The typical practices for storage and handling of hazardous materials are designed to prevent the following: exposure to individuals, releases to the environment, and mixing (which could cause explosions, fire, or unwanted chemical reactions and releases). See Section 9.0 *How Do I Comply With Spill or Chemical Release Requirements?* for a multimedia overview of requirements, or, for more specific detail, see each statute-specific section (Sections 4.0 through 10.0).

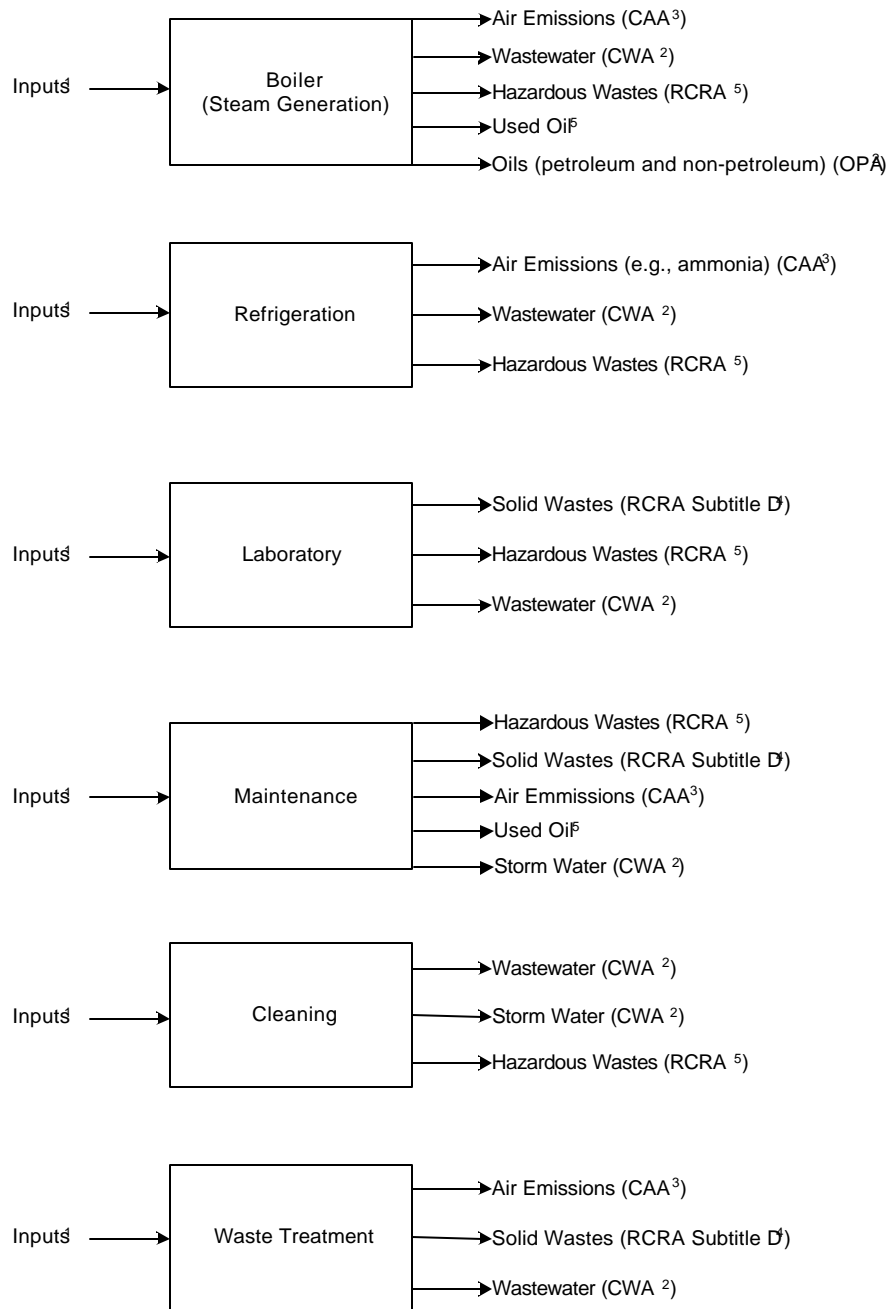
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Figure 3-1a. Generic Process Map with Examples of Regulated Outputs



¹ Some Inputs may be regulated under federal statutes (e.g., CERCLA, EPCRA). See Section 3.2 (following) and Section 7.0 How Do I Comply with the Emergency Planning and Community Right-to-Know Act Regulations?
² See Section 4.0 How Do I Comply with Wastewater Discharge and Related Regulations?
³ See Section 6.0 How Do I Comply with Air Regulations?
⁴ See Section 10.0 Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA, and TSCA.
⁵ See Section 8.0 How Do I Comply with the Hazardous Waste Regulations?

Figure 3-1b. Selected Ancillary Operations with Examples of Regulated Outputs



¹ Some Inputs may be regulated under federal statutes (e.g., CERCLA, EPCRA). See Section 3.2 (following) and Section 7.0 How Do I Comply with the Emergency Planning and Community Right-to-Know Act Regulations?
² See Section 4.0 How Do I Comply with Wastewater Discharge and Related Regulations?
³ See Section 6.0 How Do I Comply with Air Regulations?
⁴ See Section 10.0 Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA, and TSCA.
⁵ See Section 8.0 How Do I Comply with the Hazardous Waste Regulations?

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It is important to understand the difference between hazardous or toxic materials and hazardous wastes. For the purposes of this discussion, the term hazardous or toxic materials includes all materials that have **not been used, and therefore, are not wastes**. Thus, hazardous materials include those hazardous and extremely hazardous substances as defined in CERCLA/EPCRA, but not hazardous wastes as defined by RCRA.

Hazardous Wastes. Hazardous wastes are those materials which are no longer usable and are to be disposed of. Hazardous wastes must be managed according to the RCRA hazardous waste regulations. See Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* The RCRA regulations also address non-hazardous wastes (e.g., solid wastes). See Section 10.2 *Subtitle D of the Resource Conservation and Recovery Act* for more information.

Example of Hazardous Material Versus Hazardous Waste: Methyl Ethyl Ketone (MEK)

Hazardous Material	A drum of MEK being stored at a facility is a hazardous material under EPCRA regulations. It is not a classified as a hazardous waste under RCRA because <u>it is not a waste</u> .
Hazardous Waste	As a waste, MEK is a RCRA-listed hazardous waste . A drum of MEK that cannot be used (e.g., is contaminated during use, exceeds its shelf-life, or is off-spec), becomes a waste and must be disposed of as a hazardous waste. Additionally, MEK that is released in the event of a spill or accidental release, must be managed as a hazardous waste.

3.2.2 Overview of Outputs and Applicable Statutes

Outputs from food processing include the saleable products being produced and the wastes. This section will focus on the wastes and the environmental regulations that apply to their management and/or disposal. You must first identify all the wastes your facility generates.

Wastes are generated throughout your process (see generic Figure 3-1a), as well as from your ancillary operations (see generic Figure 3-1b). Many activities occur during each part of the process that generate wastes, including the following:

<u>Process Step</u>	<u>Activity Generating Waste</u>
Storage	Storage of raw materials, refrigeration, and onsite transport.
Receiving and Preparation	Loading, conveyor handling, cleaning, inspection, sorting, separating, washing, peeling, cutting, and pulverizing. Also includes water unloading and fluming.
Processing and Filling	Mixing, cooking, freezing, concentrating, freeze-drying, filling, cooling, preserving, and flavoring.

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<u>Process Step</u>	<u>Activity Generating Waste</u>
Packaging and Printing	Can-making, printing, packaging (e.g., plastic bag, paper, can, glass jars and bottles, cardboard, and pallet-packaging).
Storage and Distribution	Storage of prepared materials, refrigeration, and loading.

The wastes generated can take one of the four forms called *wastestreams*, including wastewaters, air emissions, hazardous wastes, and solid wastes. Each of these wastestreams is regulated by one or more environmental statutes as follows:

- *Wastewater* is regulated under the Clean Water Act (CWA). Additionally, some discharges of wastewater to underground injection wells are regulated under the Safe Drinking Water Act (SDWA).
- *Air emissions* are regulated under the Clean Air Act (CAA). Some air emissions, such as those from waste storage or the burning of hazardous waste, are regulated under RCRA.
- *Hazardous wastes* are regulated under RCRA.
- Solid wastes are regulated under RCRA Subtitle D.

In addition to the regulatory background information provided in Section 2.0 *Guide to EPA's Major Environmental Statutes*, the following sections, organized by statute (with the exception of Section 9.0), provide additional information on regulatory compliance requirements your facility must follow when managing these wastestreams:

- Section 4.0 How Do I Comply with Wastewater Discharge and Related Regulations?
- Section 5.0 How Do I Comply with Safe Drinking Water Regulations?
- Section 6.0 How Do I Comply with Air Regulations?
- Section 7.0 How Do I Comply with the Emergency Planning and Community Right-To-Know Act Regulations?
- Section 8.0 How Do I Comply with the Hazardous Waste Regulations?
- Section 9.0 How Do I Comply With Spill or Chemical Release Requirements? For purposes of comparison, this section pulls together and briefly summarizes your responsibilities for emergency planning and response requirements across several statutes [e.g., EPCRA, CERCLA, CWA, Oil Pollution Act (OPA), CAA, RCRA]. Always refer to the statute-specific section, the regulations, or program guidance for additional information.

- C Section 10.0 Other Major Environmental Statutes and Regulations: CERCLA, RCRA Subtitle D, FIFRA, and TSCA.

3.3 Conducting a Waste Analysis

3.3.1 Example Waste Analysis For SIC 203 Facility

The following discussion presents an example (in **Figure 3-2** and **Table 3-2**) of how to apply this method of examining process inputs and outputs (e.g., wastes) and identifying applicable environmental requirements for a facility in SIC Code 203, *Canned, Frozen and Preserved Fruits, Vegetables and Food Specialties*. The types of facilities included in SIC Code 203 are presented in **Table 3-1**.

Table 3-1. Types of SIC 203 Facilities

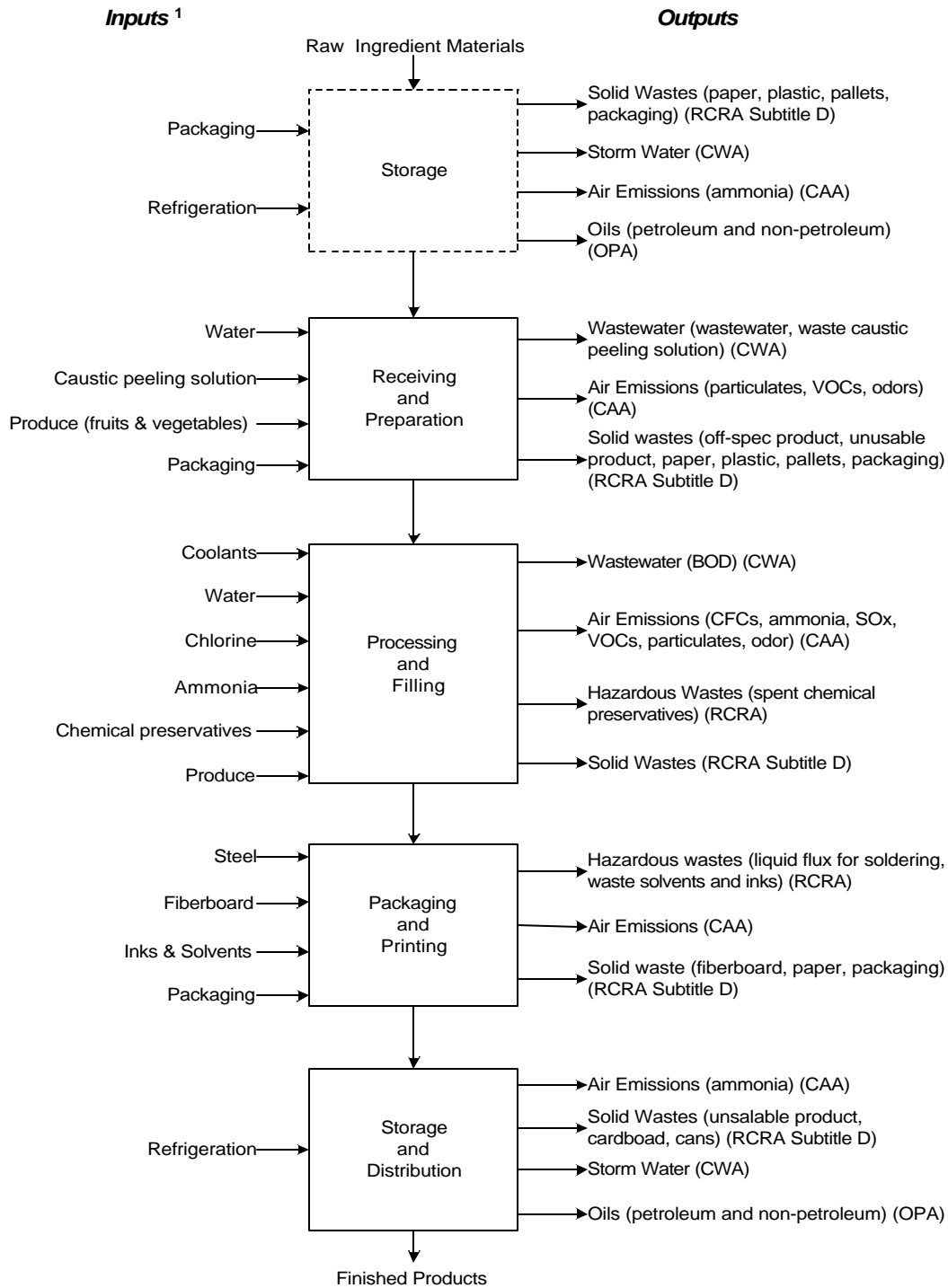
SIC	NAICS *	Types of Facilities
2032	311422 and 311999	Canned Specialties
2033	311421	Canned Fruits, Vegetables, Preserves, Jams and Jellies
2034	311423 and 311211	Dried and Dehydrated Fruits, Vegetables, and Soup Mixes
2035	311421 and 311941	Pickled Fruits and Vegetables, Vegetable Sauces and Seasonings, and Salad Dressings
2037	311411	Frozen Fruits, Fruit Juices, and Vegetables
2038	311412	Frozen Specialties, Not Elsewhere Classified

* The 1997 North American Industrial Classification System (NAICS) codes for the food processing industry will replace the 1987 SIC codes in publications of the U.S. Statistical Agencies over several years (1998-2004), beginning with publications of the NAICS United States Manual. The NAICS Implementation Schedule for these agencies is available on the U.S. Census Bureau's Internet site at <http://www.census.gov/epcd/naics/timeschd.html>.

Figure 3-2 presents a waste analysis for a hypothetical SIC Code 203 facility. The common process activities include: (1) storage (e.g., storage of raw produce); (2) receiving and preparation (e.g., sorting fruits and vegetables to remove immature or substandard ones; cleaning and washing; peeling [sometimes using caustic solutions to remove peels]; and coring and pitting); (3) processing and filling; (4) packaging and printing; and (5) storage and distribution. Typical inputs and outputs are identified for each process activity.

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Figure 3-2. Process Waste Analysis for a SIC 203 Facility



¹ Some, not all, of the inputs listed in this figure may be regulated under federal statutes (e.g., CERCLA, EPCRA). See Section 3.2 and Section 7.0 How Do I Comply With the Emergency Planning and Community Right-to-Know Act Regulations?

To further explore this facility's wastes, **Table 3-2** presents examples of typical wastes from each process activity. Each facility waste is placed in the table by category of "Wastestream" (Column 1) and "Process Steps" (Columns 2-5). Ancillary operations (Column 6) show examples of wastes from steam generation, cleaning, and maintenance.

3.3.2 Completing a Waste Analysis For Your Facility

This section provides a blank process waste analysis process worksheet (**Figure 3-3**) and a blank waste analysis table (**Table 3-3**) for you to complete for your facility. These tools can help you identify your facility's inputs and corresponding regulated outputs (e.g., wastes), as well as the environmental regulations that apply to these wastes. Please modify these tools as needed based on your facility's operations.

To complete your waste analysis, follow the steps below. Fill the information in **Figure 3-3** and **Table 3-3** as you go through each step:

(1) Identify Process Activities and Ancillary Operations. Identify all of your process activities and ancillary operations.

(2) Identify Inputs. Identify all of the inputs to these activities and operations. Remember that some of these inputs may be regulated under specific EPA statutes (e.g., EPCRA, CERCLA, OPA, CWA), as well as under the Occupational Safety and Health Administration (OSHA). Refer to the appropriate statute-specific section for more information. Also, for a very brief overview of spill or chemical release requirements across EPA statutes, please refer to Section 9.0. *How Do I Comply With Spill or Chemical Release Requirements?*

(3) Identify Outputs and Wastestreams. Identify your outputs and the wastestream to which each output belongs. While your facility has several types of outputs, this activity is focused on identifying those outputs which are regulated - primarily wastes. As discussed earlier, waste outputs are regulated differently depending on the wastestream (wastewater, hazardous wastes, air emissions or solid wastes) to which they belong. Once you identify the wastestream, you can refer to the appropriate EPA statute-specific section of this guide for more information on how to manage those wastes and comply with the regulations.

Table 3-2. Waste Analysis for SIC Code 203 Facility

Waste-streams	Process Activities						Ancillary Operations
	Storage	Receiving and Preparation	Processing and Filling	Packaging and Printing	Storage and Distribution		
Wastewater	<ul style="list-style-type: none"> Hydraulic lift oil Waste food residue Outdoor maintenance spills Vegetable oils and animal fats 	<ul style="list-style-type: none"> Pollutants (e.g., BOD, COD, and pH) Caustic solution Suspended solids Waste product residue Oil and grease Spilled product 	<ul style="list-style-type: none"> pH Cooking oils Oil and grease Cooling water (from container cooling) 	<ul style="list-style-type: none"> Ink and coating solvents (glycol ethers, MEK) Metal pigment compounds Rinse water Used fixer Water-based inks 		<ul style="list-style-type: none"> Cleaning wastewater Pollutants (e.g., BOD, COD and TSS) pH Residual pesticides 	
Hazardous Wastes	<ul style="list-style-type: none"> Vehicle maintenance waste 		<ul style="list-style-type: none"> Spent or unusable chemical preservative 	<ul style="list-style-type: none"> Solvents Liquid flux for soldering Waste ink Solvent-laden rags Used fountain solution 	<ul style="list-style-type: none"> Vehicle maintenance waste 	<ul style="list-style-type: none"> Spent solvent-based cleaning materials Spent lab chemicals Used oil 	
Air Emissions	<ul style="list-style-type: none"> VOCs from waste product Odors 	<ul style="list-style-type: none"> VOCs Particulates Odors Chlorinated organics 	<ul style="list-style-type: none"> CFC, ammonia emissions from coolants and cooling processes SOx from preserving VOCs, odors, particulate emissions 	<ul style="list-style-type: none"> VOCs 		<ul style="list-style-type: none"> Vented lab chemicals Fugitive emissions from cleaning materials NOx, SO₂, and particulates 	

Figure 3-3. Process Waste Analysis Worksheet

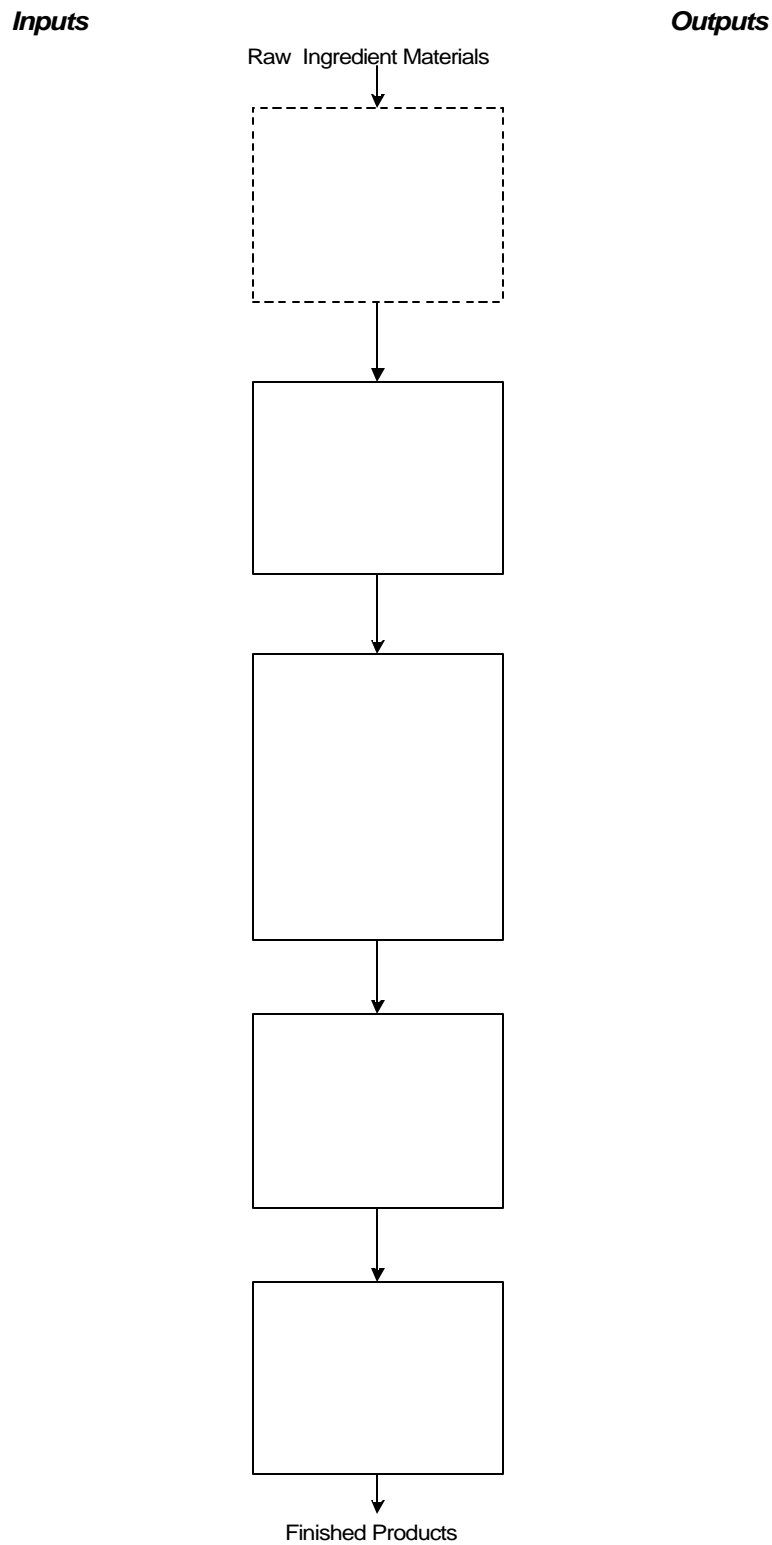


Table 3-3. Waste Analysis Worksheet

Wastestreams	Process Activities				Ancillary Operations
Wastewater					
Hazardous Wastes					
Air Emissions					
Solid Wastes					

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4. HOW DO I COMPLY WITH WASTEWATER DISCHARGE AND RELATED REGULATIONS?

4.1 Introduction

The discharge of wastewater from your food processing facility generally will be covered by either the federal Clean Water Act (CWA) or the Safe Drinking Water Act (SDWA) (see Section 5.5 *Underground Injection Control (UIC) Requirements*). In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), now known as the CWA, which established the basic framework for protecting the waters of the United States. The CWA and its regulations now focus on keeping conventional, nonconventional (including oil and grease), and toxic water pollutants out of our rivers, lakes, and oceans.

Generally, federal regulations target three types of industrial discharges. As a food processing facility, your industrial wastewater discharges probably fall into one of these categories:

- (1) **Direct discharges** which include any wastewater from an industrial facility (e.g., untreated, unpolluted wastewater or treated process wastewater) that is discharged straight to surface waters (e.g., ponds, lakes, oceans, streams, and wetlands). Storm water discharges also are considered a type of direct discharge. See Section 4.3 *Am I A Direct Discharger?*
- (2) **Indirect discharges** which include any wastewater from an industrial facility that is discharged to a publicly owned treatment works (POTW), which subsequently discharges to a surface water. See Section 4.4 *Am I An Indirect Discharger?*
- (3) **Land application** of industrial wastewater discharges. Land application discharges include any wastewater from an industrial facility that is discharged to land to either condition the soil or to fertilize crops or other vegetation grown in the soil. (See Section 4.7.1 *Land Application of Wastewater*.)

*If your food processing facility also operates an **Animal feeding operation (AFO)**, you may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit that includes the AFO if the AFO discharge goes directly to surface waters. Check with your permitting authority for more information.*

For more information, visit EPA's water programs homepage at <http://www.epa.gov/wow>.

4.2 Wastewater Generated During Food Processing Operations

Process Wastewater

Wastewater at food processing facilities commonly is generated during food preparation, processing, and cleaning operations. As presented in Table 3-2. *Waste Analysis for SIC Code 203 Facility*, there are many common wastes that typically are found in food processing wastewater. This wastewater can contain a variety of pollutants or characteristics, some of which are regulated by federal, state, or local requirements.

Regulated pollutants include:

- biochemical oxygen demand (BOD)
- chemical oxygen demand (COD)
- total suspended solids (TSS)
- oil and grease (O&G)
- total Kjeldahl nitrogen (TKN)
- high or low pH
- ammonia nitrogen
- phosphorus.

Note that these are *examples* of conventional pollutants likely to be regulated in your wastewater discharge permit. In addition, your permit may include discharges of toxics (e.g., ammonia) and nutrients (total nitrogen, total phosphorus). The amount of these pollutants that you are allowed to discharge in your wastewater will vary depending on where you discharge (e.g., direct, indirect, or other) and the applicable regulations.

Storm Water

Another potential source of wastewater at your food processing facility is storm water. Storm water discharges begin when rain comes in contact with potential pollutants, such as product spills, uncovered waste containers, or spilled liquids related to vehicle or mechanical parts maintenance. The pollutants found in storm water will be dependent on the type of material(s) the rain comes in contact with prior to discharge.

After you identify the wastewater (process and storm water) generated by your facility, you must determine how best to manage it. As discussed above, there are several methods that your food processing facility can use to dispose of your wastewater. Some of these methods require you to obtain a permit as well as conduct monitoring of pollutant levels in your wastewater. The following sections discuss the federal regulations that apply to your wastewater discharges and related activities and how you can comply with these regulatory requirements. See Section 4.3.2 *Storm Water Dischargers* for more information.

4.3 Am I a Direct Discharger?

If your food processing facility discharges process wastewater, cooling water (contact or non-contact) and/or storm water straight to surface waters (or through any conveyance system through which water flows and then discharges directly to surface waters, i.e., through a “point

source”), you are a direct discharger. See Appendix A.1 *Summary of Principal Regulations Under the Clean Water Act* for the complete definition of a point source. Specific requirements that apply to food processing wastewater discharges and cooling water are discussed in Section 4.3.1; storm water discharges are discussed in Section 4.3.2.

4.3.1 Direct Dischargers to Surface Waters

As a direct discharger, you must apply for and obtain a permit under EPA’s National Pollutant Discharge Elimination System (NPDES) program. A NPDES permit sets limits, often referred to as **effluent limits**, on the amounts of pollutants that can be discharged to surface waters.

Permits must be obtained from EPA or the authorized state or territory. As of March 1998, EPA has authorized 42 states and one territory to administer the NPDES program. Where permit authority has not been delegated to the state or territory, you must apply for permits directly from EPA rather than the state authority. EPA has not delegated authority to the following states and territories: Alaska, Arizona, District of Columbia, Idaho, Maine, Massachusetts, New Hampshire, New Mexico, Pacific Territories, Puerto Rico, Texas, and the federal Tribal Lands.

A NPDES permit:

- Specifies the amount of pollutants (e.g., effluent limits) that can be discharged based on either available wastewater treatment technology or on the specific water quality standards of the surface water.
- Generally requires a facility to routinely conduct monitoring and submit reports (generally on an annual, quarterly, or monthly schedule). Such requirements are determined on a facility-specific basis; however, there are some reporting requirements that apply to all facilities. These requirements are presented in Table 4-1.
- Requires that all records related to monitoring be maintained by the facility for at least three years.
- May contain other site-specific requirements, such as (1) construction schedules, (2) best management practices (BMPs), (3) additional monitoring for non-regulated pollutants, and (4) spill prevention plans.

For facilities in coastal areas, states may include stricter permit limits in order to meet the requirements of the Coastal Zone Management Act (CZMA). See Section 4.7.2 Construction or Plant Modification Activities.

A NPDES permit application may be submitted as either a **general** permit or an **individual** permit, depending on EPA or state requirements. General permits, which usually are limited to storm water discharges (see Section 4.3.2 *Storm Water Dischargers*), typically are less complicated than individual permits and do not require as much information to apply for the permit. The application for a general permit is often referred to as a Notice of Intent (NOI).

How to Comply If You Are a Direct Discharger

- T Contact your EPA or state regulatory agency to find out how to obtain a permit application. Apply for and obtain a NPDES permit.
- T As part of the permit application, you will be required to analyze your industrial wastewater for BOD, COD, total organic carbon (TOC), TSS, ammonia (as N), temperature and pH.¹ In addition, your food processing facility will likely be required to analyze your industrial wastewater for oil and grease, and may be required to analyze for additional parameters (e.g., total phosphorus or total nitrogen) based on the water quality standards applicable to the receiving water, and any applicable state regulations. While the effluent limits and other requirements in your permit will be specific to your facility, all permits will require reporting, sample collection, and sample analysis (see 40 CFR 122.41, 136.1-136.4, and 136.3).
- T Read all permits carefully and make checklists of requirements.
- T Follow the monitoring and reporting activities specified in your permit. Compare the monitoring results to the effluent limits to verify that your facility meets the effluent limits in your NPDES permit. Conduct any additional required reporting and recordkeeping activities for your wastewater discharge.
- T Notify the permitting authority as indicated in Table 4-1 *Reporting Requirements for All NPDES Permit Holders*.

Table 4-1. Reporting Requirements for All NPDES Permit Holders

Specific Requirement	
Notify the permitting authority of any noncompliance with your permit that may endanger health or the environment.	Within 24 hours of becoming aware of violation; written submission within 5
Notify the permitting authority of any planned physical alterations or additions to the facility.	As soon as possible.
Notify the permitting authority of any planned changes in your discharge that may result in noncompliance.	In advance of changes.
Notify the permitting authority of the transfer of the facility to a new owner.	As soon as possible in advance of the transfer.

¹ Some industrial sectors also are required to analyze for some or all of the 126 priority pollutants (40 CFR 423, Appendix A); however the federal NPDES regulations do not require food processors to analyze for these pollutants.

Surface waters in the United States are protected through state-established **water quality standards**. These standards were created for the purpose of establishing minimum water quality requirements for surface waters. Water quality standards contain two distinct elements: 1) use designations, and 2) specific water quality criteria to protect these designated uses. Each water body in the country is given one or more water use designations, such as aquatic life warmwater habitat, primary contact recreation, or public water supply. Based on these designations, parameter-specific criteria are applied to the point sources discharging into the specific water body.

Total Maximum Daily Loads (TMDLs) focus on restoring and protecting surface water. TMDLs impose water quality-based discharge limits from point sources based on a watershed approach. They are written, quantitative evaluations of water quality problems and contributing sources of pollution. A TMDL:

- C Identifies the amount a pollutant needs to be reduced to meet water quality standards
- C Allocates pollutant load reductions among pollutant sources in a watershed
- C Provides the basis for taking actions needed to restore/protect a waterbody.

Direct discharges of some pollutants from your facility (e.g., ammonia) may be affected by the development and implementation of TMDLs by the states. For more information on TMDLs, refer to *Final Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program* (July 28, 1998) on the EPA Homepage at <http://www.epa.gov/OWOW/tmdl/advisory.html>. For additional information on pollutants of concern, water quality standards, TMDLs, or your permit, contact your permitting authority.

4.3.2 Storm Water Dischargers

Introduction and Background

Under Phase I of the storm water program, which currently is being implemented, storm water discharges associated with industrial activity, such as food processing, must be covered by a NPDES storm water permit regardless of whether they discharge to a municipal separate storm sewer system or directly to waters of the United States. Municipal separate storm sewer systems are designed to convey storm water from impermeable areas to bodies of water. Waters of the United States are defined to include virtually any surface waters, whether navigable or not.

The term “storm water discharge associated with industrial activity” means a storm water discharge from one of 11 categories of industrial activity defined in 40 CFR 122.26. Six categories are defined by Standard Industrial Classification (SIC) codes and five are defined by regulated industry activity narrative descriptions. Food processing facilities

Exemption from Storm Water Permit: *Food processors that have no exposure of materials and activities to storm water are exempt from these requirements. “No Exposure” means that there is **no possibility** of storm water, snow fall, snow melt, or storm water “run on” coming in contact with any process or storage related activity.*

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are listed in category xi. **This category includes facilities with storm water discharges from areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery are exposed to storm water.** These areas may include:

- Industrial plant yards
- Material handling sites
- Refuse sites
- Sites used for the application or disposal of process wastewater (as defined in 40 CFR 401)
- Sites used for the storage and maintenance of material handling equipment
- Sites used for residual treatment, storage, or disposal
- Shipping and receiving areas
- Manufacturing buildings
- Storage areas (including tank farms) for raw materials, and intermediate and finished products
- Areas where industrial activity has taken place in the past and significant materials remain.

Material handling activities at your facility include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product. The term excludes areas located on facility property separate from the facility's industrial activities, such as office buildings and accompanying parking lots, as long as the drainage from the excluded areas **is not mixed** with storm water drained from the above described areas. If storm water from your food processing facility is discharged to a municipal combined sewer system, the storm water discharges are subject to indirect discharger requirements (see Section 4.4).

Storm Water Permits

Food processing facilities with storm water discharges must be covered by a NPDES permit regardless of whether they discharge to a municipal separate storm sewer system or directly to waters of the United States. **Storm water permits are not required where runoff flows through a combined sewer to a POTW.** Storm water permits provide a mechanism for monitoring the discharge of pollutants from these sources to waters of the United States and for establishing appropriate controls.

Facilities can comply with NPDES permit requirements for storm water discharges by submitting (1) a **Notice of Intent (NOI)** to be covered under a **general** permit (Baseline or Multi-Sector); or (2) an application for an **individual** permit; and (3) complying with all of the conditions specified in the applicable permit. In the past, facilities could submit an application to be covered under a group permit, but this option and the original group permit have expired.

- c **General Storm Water Permit Applications - Baseline or Multi-Sector.** Your food processing facility may be permitted under a general permit, **whether EPA or the State is the permitting authority.** General permits require development of a storm water pollution prevention plan (SWPPP) and periodic discharge monitoring. In those states and territories without NPDES authorization (i.e., EPA is the permitting

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authority, see below), EPA has developed and finalized general permits that cover 29 industry categories including food processors.

EPA has developed two different general permits under which food processors can discharge their storm water: the **Baseline** general permit, and the **Multi-Sector** general permit. The Baseline general permit was originally issued in 1992 and covered storm water discharges from many different facilities, both industrial and municipal, under the same requirements. The Multi-Sector permit was issued in 1995, and like the Baseline permit, covered many different industrial facilities. The main difference between the two permits is that the Multi-Sector permit established different requirements for different industries, while the Baseline established one set of requirements for all industries. As of September 1998, most food processing facilities were covered under the Multi-Sector permit. More detail on the eligibility, deadlines, expiration dates, and permit requirements of each of these facilities is provided below.

- C **Individual Storm Water Permit Applications.** If a facility has storm water discharges and did not participate in a group application, or did not obtain coverage under a general permit by March 1996, it may be required to obtain and submit an individual permit application consisting of Form 1 (General Information) and Form 2F (Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity). These forms can be obtained from and submitted to the permitting authority. Form 2F requires the facility to submit a site drainage map, a narrative description of the site identifying potential pollutant sources, and quantitative testing data of pollutant sources. A facility is required to submit an individual permit application 180 days before starting a new discharge.

Where do I get a storm water permit? General permits, NOIs, individual permit applications, and individual permits can be obtained from your NPDES permitting authority. Copies of general permits and NOIs can be downloaded from the Internet. Information on downloading NOI's and general permits can be found at <http://www.epa.gov/earth1r6/6en/w/sw/home.html>.

As of March 1998, 42 states and one territory have been delegated authority by EPA to administer the NPDES program. EPA has not delegated NPDES authority to the following states and territories: Alaska, Arizona, District of Columbia, Idaho, Maine, Massachusetts, New Hampshire, New Mexico, Pacific Territories, Puerto Rico, Texas, and the federal Tribal Lands. Of the delegated NPDES states and territories, only the Virgin Islands has not been delegated authority for the storm water general permits program as well. Where permit authority has not been delegated to the state or territory, food processing facilities must obtain NOIs, general permits, or individual permit applications directly from EPA rather than from the state authority. Contact your permitting authority, either EPA or your state, to find out how to obtain the appropriate documents and to determine whether the individual or general permit is required.

Note: *If your storm water discharges are currently covered by a general permit (Baseline or Multi-Sector), you are not required to submit an individual permit application (provided that neither EPA nor the implementing agency required an individual permit application on a case-by-case basis). NOI requirements for general permits usually address only general information and typically do not require sample*

Storm Water Permits - Conditions and Requirements

Your food processing facility will be subject to different requirements depending on whether you are covered under a Baseline general storm water permit, a Multi-Sector general storm water permit, or an individual storm water permit. Conditions and requirements for each of these permits are described below.

Eligibility, Application Deadlines, and Expiration Dates

Each of the permits available to food processing facilities has different eligibility requirements, application deadlines, and expiration dates. These requirements and deadlines are summarized in Table 4-2. *Eligibility, Deadlines, and Expiration of General and Individual Permits for Food Processing Facilities.*

Baseline General Permit: In order to be covered under a storm water **Baseline general permit** on September 30, 1998, your food processing facility was required to do the following: 1) submit a NOI to EPA or the permitting authority **prior to October 1, 1992**, and 2) submit a second NOI **prior to September 9, 1997**, in order to be covered under the **administratively-extended** Baseline general permit. If you were eligible and met these deadlines, then your facility is still covered under the administratively-extended Baseline general permit.

- C Eligibility: Your facility was eligible to submit these NOIs if it did **not have an adverse impact on endangered species**, and your storm water discharges were not subject to EPA's *Storm Water Effluent Limitation Guidelines*.
- C Expiration: Your Baseline general permit **expired in 1997**, unless you met the deadline for submitting the second NOI to obtain coverage under the administratively-extended Baseline permit. The administratively-extended permit **will expire 90 days** after the modified Multi-Sector General permit becomes final (late 1998 or early 1999).
- C Future Requirement for Permit Coverage: The **administratively-extended Baseline general permit** expires **90 days after EPA issues modified Multi-Sector permit becomes final** (late 1998 or early 1999). When the administratively-extended Baseline expires, food processing facilities that are covered under the administratively-extended Baseline permit will have 90 days to submit a NOI to be covered under the modified Multi-Sector permit and to **meet all of the conditions** of the Multi-Sector permit (including implementing new components of the SWPPP).

EPA's recommendation to food processing facilities: Because the modified Multi-Sector permit is more complex than the Baseline permit, and because of the short time period available to implement the Multi-Sector requirements (see below), **EPA strongly recommends that food processing facilities that are covered under the Baseline permit begin to implement the requirements of the modified Multi-Sector permit (which, for food processing facilities, will have the same requirements as the currently available Multi-Sector permit) as soon as possible, rather than waiting for the Baseline permit to expire.** (See following subsection for explanation and requirements pertaining to eligibility and applications deadlines under the **Multi-Sector** and the **modified Multi-Sector general permit**.)

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Table 4-2. Eligibility, Deadlines, and Expiration of General and Individual Permits for Food Processing Facilities

	Baseline General Permit	Multi-Sector General Permit	Individual Permit
Eligibility	Food processing facilities which do not have an adverse impact on endangered species, and do not include additional non-food processing activities (e.g., can making) that are subject to effluent guidelines.	Food processing facilities which do not have an adverse impact on endangered species and certify there will not be an impact.	All facilities are eligible for individual permits at the discretion of the permitting authority.
Application Deadline	Existing dischargers must have submitted a NOI by 10/1/92 and a second NOI for the administratively-extended Baseline permit prior to 9/9/1997. New dischargers must submit NOI two days prior to commencing industrial activity.	Existing permit holders and group applicants must have submitted a NOI by 12/28/96 or within 90 days of finalization of modified Multi-Sector permit. New dischargers must submit NOI two days prior to commencing industrial activity.	Existing permit holders must submit applications at least 180 days prior to the expiration of existing permit. New discharges must apply for and receive permit prior to commencement of industrial activity.
Expiration	Baseline permit expired in 1997 except for those facilities that submitted NOIs prior to 9/9/97 to continue coverage (until 90 days after the modified Multi-Sector permit is issued) under the administratively-extended Baseline permit.	Multi-sector permit expires in 2000 (even for those facilities that waited to file a NOI until modifications in the Multi-Sector permit were complete). EPA will issue new Multi-Sector permits or extend existing permit when existing permit expires.	Permits are valid for dates specified on the individual permit.

Multi-Sector General Permit: In order to be covered under a storm water **Multi-Sector general permit** on September 30, 1998, your food processing facility was required to submit a NOI to EPA and to meet certain eligibility criteria. Deadlines for submitting a NOI differed for facilities in operation prior to September 29, 1995, and those commenced operation after September 29, 1995.

Facilities in the first category (i.e., those facilities **in operation prior to September 29, 1995**) had **two** periods for submitting a NOI depending on the status of your permit coverage at the time.

Period 1: The NOI submission period was between **September 29, 1995 to December 28, 1995**, if your facility was **not** covered under the **Baseline general permit**, and met the eligibility criterion below.

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Period 2: This NOI submission period was between **June 11, 1997 and September 9, 1997**, if your facility was covered under **the Baseline general permit**, and you wanted to obtain coverage under the Multi-Sector General permit **before the expiration** of the **Baseline general permit** in 1997.

Facilities in the second category (i.e., those facilities that **commenced operation after September 29, 1995**) are required to submit a NOI **at least 2 days prior** to commencing operations.

- C Eligibility: In any of these situations, your facility was required to meet the applicable deadline and meet both of the following condition: 1) to have no adverse impact on endangered species; **and** 2) to certify that there will be no adverse impact.
- C Expiration: The Multi-Sector permit expires on September 29, 2000.
- C Future Requirement for Permit Coverage: If your facility is currently, or soon will be covered under the Multi-Sector permit, you must contact your permitting authority at least 90 days prior to September 29, 2000 in order to determine if you will be required to submit a NOI to be covered under a new Multi-Sector permit, or to be covered under an extension of your current Multi-Sector permit.

Individual Storm Water Permit: In order to be covered under an **Individual storm water permit**, your facility is required submit a permit application to the EPA or state permitting authority, receive a permit, and meet the conditions of the permit prior to commencing operations.

- C Eligibility: Facilities are eligible for individual storm water permits if they choose to apply for individual permits, or if required to do so by the permitting authority. To be eligible, facilities that commenced operations prior to October 1992 were required to submit a storm water permit application prior to October 1992. Facilities that commenced operations after October 1992 are required to submit a permit application and receive a permit prior to commencing operations.
- C Expiration: Individual storm water permits expire on the date indicated on the permit. Individual permits are usually valid for five years.
- C Future Requirement for Permit Coverage: If your facility is currently covered under an Individual storm water permit, you are required to submit an application to renew your permit at least 180 days prior to the expiration of your current permit.

What do I do if my food processing facility missed the previous deadlines for submitting NOIs? If your facility did not submit NOIs prior to the applicable deadlines, you must contact your State or EPA Regional permitting authority to determine if you are eligible for a Multi-Sector or individual storm water permit.

What do I do if my food processing facility was previously covered under a Group permit? If your food processing facility was previously covered under a group permit, you were required to submit a NOI for the Multi-Sector permit prior to March 29, 1996 and meet the storm

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water pollution prevention plan conditions (see Table 4-3. *SWPPP Requirements for General and Individual Permits for Food Processing Facilities* and accompanying text below) of the Multi-Sector permit by September 25, 1996.

Table 4-3. SWPPP Requirements for General and Individual Permits for Food Processing Facilities

Baseline General Permit	Multi-Sector General Permit	Individual Permit
<p>Requires consideration of <i>generic</i> pollution prevention measures and BMPs.</p> <p>Facilities subject to EPCRA Section 313 reporting requirements are required to incorporate additional measures into SWPPP, and have the plan certified by a <i>Professional Engineer</i> every three years.</p> <p>Does not provide guidance on specific Food Processing industry BMPs.</p>	<p>Requires consideration of <i>generic</i> BMPs <u>and</u> practices <i>specific</i> to the Food Processing Industry.</p> <p>Facilities subject to EPCRA Section 313 reporting requirements are required to incorporate additional measures into SWPPP, however, the plan only needs to be certified by the <i>facility operator</i>.</p> <p>Fact sheet describes applicable BMPs for the Food Processing industry.</p>	<p>SWPPP requirements are included at the discretion of the permitting authority.</p>

Storm Water Pollution Prevention Plan (SWPPP). If your food processing facility is required to obtain a storm water permit, you will likely be required to prepare and implement a storm water pollution prevention plan. Facilities are required to develop SWPPPs to prevent storm water from coming in contact with potential contaminants. Each plan is facility-specific because every facility is unique in its source, type and volume of contaminated storm water discharges. Regardless of the variations, all plans must include several common elements, such as a map and site specific considerations. The elements include:

- Facility size and location
- A description of the volume of storm water and pollutants that could potentially be discharged.
- Hydrogeology
- The environmental setting of each facility
- The predicted flow of storm water discharges.
- Climate.

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Storm water pollution prevention (P2) plans also must address how your facility will complete the following activities:

- Develop general and specific measures and controls to prevent or minimize pollution of storm water (articulated as BMPs in your plan)
- Develop a P2 Team
- Train employees
- Conduct inspections and evaluations
- Test outfalls
- Conduct recordkeeping.

Some SWPPP elements may be specific to the type of permit at your facility. Table 4-3 compares SWPPPs of Baseline general, Multi-Sector general, and Individual storm water permits.

Best Management Practices. BMPs are measures and controls used to prevent or minimize pollution. The most effective BMPs for reducing pollutants in the storm water discharges from your food processing facility are exposure minimization (preventing/minimizing storm water contact with potential contaminants) and good housekeeping. Exposure minimization practices reduce the potential for storm water to come in contact with pollutants. Good housekeeping practices ensure that the facility is responsive to routine and non-routine activities that may decrease exposure of storm water to pollutants. One simple practice is to move product storage, loading, or waste areas to existing enclosed structures.

While exposure minimization usually can be accomplished by good housekeeping and covering or bringing potential pollutants inside a facility, some food processing facilities may be required to develop additional structural controls to prevent contaminants from reaching storm sewers. Such controls may include cement pads, berms/dikes, screens, or separators. In a few instances, more intensive BMPs (e.g., detention ponds, filtering devices) may be necessary at your facility depending on the type of discharge, types and concentrations of contaminants, and volume of flow. Many food processing facilities already have some of these controls in place as part of spill control plans required under the Oil Pollution Act (see Section 4.6 *How Do I Comply With Oil Pollution Prevention Regulations?*), and can use these existing controls to help them meet the BMP requirements of their SWPPPs.

As part of the Multi-Sector general storm water permit, EPA has identified BMPs specific to the food processing sector. General storm water BMPs practices specific to food processors are shown in Table 4-4. *General Storm Water BMPs Required for Permit Holders in SIC Code 20.* Some or all of these BMPs may be required by your permit for your food processing facility. Even if not required, implementing these BMPs at your facility can be a low cost way to reduce contaminants in your storm water discharges.

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Table 4-4. General Storm Water BMPs Required for Permit Holders in SIC Code 20

Activity	Management Practice
Raw material unloading/product loading	<ul style="list-style-type: none"> • Reduce or repair defective containers (bags, drums, bottles, crates). • Prevent spills and leaks (tanks and rail cars) from reaching storm drains. • Ensure connections (hose and coupling) are secure and not leaking prior to loading or unloading. • Reduce washwater usage and cover storm drains during wash down of loading/unloading area.
Tank storage of liquids	<ul style="list-style-type: none"> • Conduct preventive maintenance and inspections of tanks and piping to avoid external corrosion and structural failure. • Train operators and monitor loading/unloading to prevent spills and overflows due to operator failure. • Whenever possible, provide secondary containment tanks and storage areas.
Drum and container storage of liquids	<ul style="list-style-type: none"> • Keep containers closed except when loading or unloading. • Keep containers covered to avoid exposure to storm water. • Regularly inspect containers for signs of corrosion, spills, or leaks. • Train operators on proper handling and transporting techniques. • Immediately clean any known spills or leaks.
Solids storage in silos, holding bins, fiber drums, etc.	<ul style="list-style-type: none"> • Inspect and maintain good housekeeping practices to avoid storm water contamination from spilled product, dust, or particulates.
Air emissions	<ul style="list-style-type: none"> • Inspect emissions from ovens or other vents that may emit solids. • Regularly clean any roof top solids, or oils and greases from air emissions. • Practice proper handling techniques to avoid dust or fine solids emissions.
Solid wastes	<ul style="list-style-type: none"> • Regularly inspect dumpsters and trash cans, spent equipment, scraps, etc. • Keep all wastes covered from storm water.
Wastewater	<ul style="list-style-type: none"> • Monitor treatment processes to prevent hydraulic overflow. • Inspect and conduct preventative maintenance on outside piping and connections.
Pest control	<ul style="list-style-type: none"> • Follow proper application techniques in outside areas.
Improper connections to the storm sewer	<ul style="list-style-type: none"> • Conduct a comprehensive site inspection to ensure that no process wastewater, process floor drains, sanitary sewers, or UST overflows are connected to storm drains.
General storm water management	<ul style="list-style-type: none"> • Implementation of traditional storm water management measures (oil/water separators, vegetative swales, and detention ponds).
Erosion prevention	<ul style="list-style-type: none"> • Identification of areas with high potential for erosion and stabilization measures or structural controls used to limit erosion.

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Monitoring. Under your general or individual storm water permit, your facility will be required to conduct monitoring, which may include visual examination of storm water discharges and/or analytical monitoring. Monitoring is required primarily to provide your facility with a means for assessing your storm water contamination and evaluating the performance of your SWPPP. As indicated in Table 4-5. *Monitoring Requirements for All Food Processors* and Table 4-6 *Additional Monitoring Requirements for Specific Food Processing Operations*, most food processing facilities are required to conduct only visual monitoring if covered under the Multi-Sector general permit, and no monitoring if covered under the Baseline general permit. **Note that some states may require food processing facilities to monitor additional parameters.**

Table 4-5. Monitoring Requirements for All Food Processors

Category of Food Processor	Baseline Permit (one time monitoring for discharge characterization)	Multi-Sector Permit (ongoing monitoring)			Individual Permit
		Parameter	Monitoring Frequency	Years monitoring required	
All food processors	none* (except for animal handling/meat packing as noted below) NOTE THAT ONGOING MONITORING MAY BE REQUIRED ON A CASE BY CASE BASIS.	Visual examination	Quarterly	All	Monitoring Requirements established by the individual permitting authorities.
Facilities subject to EPCRA Section 313 reporting requirements for water priority chemicals.	O&G, BOD, COD, TSS, TKN, TP, pH, acute whole effluent toxicity, and any Section 313 water priority chemical for which the facility reports.	No additional monitoring based on EPCRA reporting status.			All individual permit requirements are specific to the facility and established by the permitting authority.
Facilities that can certify there are no significant materials or industrial activities exposed to storm water.	Exempt from all monitoring.	No provisions for these facilities in Multi-Sector permit.			
Facilities that can certify that there are no sources of a pollutant present.	No provisions for these facilities in Baseline permit.	Facilities may be exempt from monitoring certain pollutants on a <u>pollutant by pollutant basis</u> .			

Table 4-6 Additional Monitoring Requirements for Specific Food Processing Operations

Category of Food Processor	Baseline Permit (one time monitoring for discharge characterization)	Multi-Sector Permit (ongoing monitoring)			Individual Permit
		Parameter	Monitoring Frequency	Years monitoring required	
Grain mill products	None	TSS	Quarterly	Year 2 and 4 of permit coverage	All monitoring required under individual permit is facility specific and determined by the permitting authority.
Fats and oils	None	TSS, BOD, COD, and nitrate + nitrite nitrogen	Quarterly	Year 2 and 4 of permit coverage*	
Animal handling/meat packing	grab and composite (where appropriate) for BOD, oil and grease, COD, TSS, TKN, Total Phosphorus, pH, and fecal coliform.	No specific requirements under Multi-Sector permit.			

* Facilities with pollutant concentrations lower than benchmarks in the second year are exempt from monitoring in the fourth year.

4.4 Am I an Indirect Discharger?

If you are an indirect discharger, your food processing facility discharges wastewater into a sewer system that leads to a municipal treatment plant, also known as a POTW. The POTW typically is owned by the local municipality or a regional board or sewer authority.

Usually, POTWs treat domestic household wastes using biological treatment processes. Most POTWs cannot handle large quantities of industrial wastewater, because certain pollutants present in industrial discharges can adversely affect the POTW's treatment processes or pass through the plant directly to surface water without receiving adequate treatment. However, some POTWs are designed to accept large industrial waste loadings, often with prearranged industrial financial assurances.

In response to the potential problems caused by industrial wastewater, federal pretreatment regulations were developed to prevent the discharge of pollutants to the POTW that will:

- Interfere with the operation of the POTW
- Pass through the POTW untreated
- Create problems with disposal of sludge from the POTW
- Cause problems to treatment plant workers from exposure to chemicals.

These regulations, referred to as the **pretreatment regulations**, apply to all industrial facilities, including food processing facilities, that discharge industrial wastewater to POTWs. Local POTWs with approved pretreatment programs have responsibility for enforcing pretreatment requirements. Because the primary enforcement authority for pretreatment regulations is often the local POTW, **to assure compliance you must contact your local POTW**, even if you have already contacted the State or EPA region.

4.4.1 Pretreatment Requirements

There are three types of pretreatment requirements: requirements for general industry (*general pretreatment standards*), requirements for specific industries (*categorical pretreatment standards*), and locally established requirements for specific facilities (*local limits*). At a minimum, the federal *general pretreatment standards* apply to your food processing facility's discharge to a POTW, while *local limits* may also apply to your facility.

- (1) **General pretreatment standards** establish minimum discharge requirements for all industrial discharges, including those from food processing facilities. These standards protect POTWs by prohibiting specific wastestreams from being discharged by industrial users. The general types of pollutants prohibited under the general pretreatment standards include:
 - C Pollutants that cause pass through or interference at the POTW (including vegetable oils and animal fats).
 - C Pollutants creating a fire or explosion hazard in the POTW.
 - C Pollutants that will cause corrosive structural damage (i.e., any wastewater with a pH less than 5).
 - C Pollutants that are solid or viscous that can obstruct the wastewater flow.
 - C Any pollutant released in a discharge at a flow rate or concentration that will cause interference at the POTW.
 - C Heat in amounts that will inhibit biological activity at the POTW, but in no case, discharges that will cause the POTW influent to exceed 104 degrees Fahrenheit.
 - C Petroleum oil, non-biodegradable cutting oil, or products of mineral oil in amounts that will cause interference or pass through.
 - C Pollutants that result in the presence of toxic gases, vapors, or fumes in the POTW that may cause acute worker health and safety problems.
 - C Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Some examples of typical pollutants specific to SIC Code 20 that are prohibited under the general pretreatment standards include pollutants discharged at a flow rate or concentration that will cause interference at the POTW (i.e., high BOD and COD loads). In cases where

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there are high BOD or COD loads in the wastewater, the POTW may choose to include these discharges in their surcharge program (see Section 4.4.2).

(2) **Categorical pretreatment standards** are standards established for specific types or categories of industrial facilities or processes. These facilities are known as categorical industrial users. EPA does not consider food processing facilities to be categorical industrial users. EPA has not established specific numerical limits for indirect discharges from food processors. Hence, **categorical pretreatment standards** that apply to food processing operations require compliance with 40 CFR 403 (the general pretreatment standards).²

(3) **Local Limits or Requirements** are standards established by the POTW for any or all of the industrial facilities from which it receives wastewater. These limits are designed to protect the POTW and its workers, and to meet the POTW's own direct discharge permit limits. POTWs often require food processing facilities to clean and maintain grease and grit traps on a specified schedule.

Can making operations. *If your food processing facility also includes can making (not simply packaging materials in cans), your facility will be subject to additional categorical pretreatment standards. These standards can be found in 40 CFR 465.40 through 465.46. In addition, your facility will be considered a Significant Industrial User (SIU) and be subject to the permit criteria discussed below.*

Where the POTW local limits are **more** stringent than federal requirements, they will **replace** the federal requirements. As a food processing facility, your POTW may or may not have local limits. For specific POTW limits that apply to your facility, you must contact your local POTW. **Even if your facility is not subject to local limits, the general pretreatment standards do apply.**

² EPA does not consider food processors involved in dairy products processing, grain mills, canned and preserved fruits and vegetables, canned and preserved seafood, sugar processing, and meat products point source categories (see 40 CFR 405-409 and 432) to be categorical industrial users. EPA has not established specific numerical limits for indirect discharges, known as categorical pretreatment standards, for these facilities. (Memo from Director Office of Water Enforcement and Permits to Regional Water Management Divisions Directors and Regional Water Compliance Branch Chiefs, 2/16/89)

40 CFR 403 provides **General Pretreatment Standards** for various types of food processing facilities. In 40 CFR 405-409 and 432, EPA provides several tables of effluent limits for various types of discharges (e.g., direct and indirect discharges from new and existing facilities) from various types of food processing facilities. There is a different table for each type of food processing facility, and each type of discharge from that type of facility; the tables simply refer to the **General Pretreatment Regulations**, or indicate that the industrial users (food processors) **must comply with 40 CFR 403 (the general pretreatment standards)**. If EPA considered food processing facilities to be categorical industrial users, then EPA would have established specific numerical limits for indirect discharges from food processors. Thus, the tables simply provide a reminder that food processors must comply with General Pretreatment Standards, rather than impose additional categorical pretreatment requirements.

Permit Criteria

In addition to the local limits, your POTW may require you to have a wastewater discharge permit that requires you to monitor, submit reports, and keep records of your industrial wastewater discharges. POTWs are required by federal law to permit significant industrial users (SIUs), and may permit any or **all** of their industrial dischargers, not just significant industrial users as defined below. Your food processing facility is considered a SIU if it meets any of the following criteria:

- Is subject to categorical pretreatment standards (not applicable to SIC 20);
- Discharges an average of 25,000 gallons or more per day of process wastewater (excluding sanitary, noncontact cooling, and boiler blowdown wastewater) (may apply to a food processing facility);
- Contributes a process wastestream which makes up five percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant (may apply to a food processing facility); or
- Is designated on the basis that the industrial discharger has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (may apply to a food processing facility).

If your food processing facility meets any of the above criteria, you must contact the POTW and receive a permit prior to discharging wastewater. However, even if a permit is not required, you will need to get **approval** from the POTW for your industrial wastewater discharge to the POTW.

Additional Requirements

Usually, the monitoring, reporting, and recordkeeping requirements, as well as the wastewater discharge limits, are specified in facility-specific permits. Also, as shown in Table 4-7 *Reporting Requirements for All Indirect Dischargers*, there are some reporting requirements, that apply to **all** indirect dischargers (even if they do not have a permit).

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Table 4-7. Reporting Requirements for All Indirect Dischargers³

Requirement	Time Frame
Notify the POTW or State of a discharge of wastewater that could cause problems to the POTW, including slug loading. A slug loading is defined as any relatively large release of a pollutant that might not ordinarily cause a problem when released in small quantities.	Immediately (40 CFR 403.12(f)).
Notify the POTW or state of substantial change in wastewater discharge.	Prior to the change.
<p>Notify the POTW, state hazardous waste authorities and EPA Regional Waste Management Division Director of a discharge of hazardous waste. This is a one-time notification required of those who discharge more than 15 kg of a hazardous substance in a month; or if the substance is acutely hazardous and any amount is discharged. Note: A list of acutely hazardous wastes can be found in 40 CFR 261.30(d) and 261.33(e).</p> <p>The written notification must include (1) the name of the listed hazardous waste (as listed in 40 CFR 261); (2) the EPA hazardous waste number; (3) the type of discharge; and (4) a certification that a program is in place to reduce the amount and toxicity of the hazardous waste that is generated, to the degree that is economically feasible.</p> <p>If discharging more than 100 kg of hazardous waste in one month, the notification also must include (1) identification of the hazardous waste constituents that are contained in the waste; (2) an estimate of the mass and concentration of the constituents in the waste stream discharged during the month; and (3) an estimate of how much will be discharged in the next 12 months. <i>If any new substance is listed under RCRA and a facility discharges the substance, the facility must notify the authorities cited above within 90 days of the new listing.</i></p>	One-time notification for each hazardous waste discharge [40 CFR 403.12(p)].
Additional Requirements	As specified by POTW

Private Wastewater Treatment

Sometimes, a food processing facility may discharge to a sewer that is owned and/or operated by a private industrial treatment plant. The private plant is not considered a POTW and is not required to implement a pretreatment program for indirect dischargers as described above. However, the plant may have requirements of its own that apply to the discharge of wastes.

³ In addition to the requirements listed for all industrial dischargers in Table 4-7, all SIUs (and most food processors will be SIUs as a result of their high strength waste stream) are required to submit once every six months a description of the nature, concentration and flow of the pollutants required to be reported by the control authority (either the POTW or the State/EPA).

How to Comply If You Are an Indirect Discharger

- T Obtain a copy of the state and/or local sewer use regulations or ordinance by contacting your state and/or local POTW to determine what requirements apply to your facility.
- T Contact the POTW or state to determine whether your facility must obtain a permit. Even if you are not required to obtain a permit, you may be required to obtain **approval** for your wastewater discharge.
- T Meet, at a minimum, the federal **general pretreatment standards** if you are an indirect discharger (even if your POTW does not require a permit).
- T Verify whether your wastewater discharge is meeting the effluent limits in your permit (if you have one) and that your facility is not discharging any prohibited pollutants (see Section 4.4.1 *Pretreatment Requirements*) to the POTW.
- T Conduct monitoring, reporting, and recordkeeping activities for your industrial wastewater discharge. Maintain records for all samples collected for monitoring activities for at least three years. These records, which should be available for review at any time, must include:
 - Date, place, method, and time of sampling and the names of the person(s) taking the samples
 - Date(s) the laboratory performed the analyses and the analytical methods used
 - Laboratory that performed the analyses
 - Results of the analyses.
- T Notify the state or POTW (see Table 4-7):
 - Immediately of a discharge of wastewater from your facility that could cause problems to the POTW, including slug loading
 - Promptly prior to any substantial change in your wastewater discharge
 - Of a hazardous waste discharge from your facility. You also are required to notify state hazardous waste authorities and the EPA Regional Waste Management Division Director.

4.4.2 Calculating Your Surcharge

Even if permits are not required, wastewater treatment by POTWs costs money, and most treatment works charge according to the volume of sewage treated. Many POTWs charge flat rates per unit flow and pollutants, regardless of concentration. Other POTWs may charge extra

if the waste load exceeds certain specified levels. This extra charge is called a surcharge. Surcharges are used for pollutants that typically can be treated at the wastewater treatment plant such as BOD and TSS (two pollutants commonly found in high concentrations at food processing facilities).

By definition, a surcharge is a charge that is based on the pounds of waste material in industrial wastewater **in excess** of normal levels. The surcharge is levied in addition to the normal sewer service charge which is the regular charge for treating normal strength wastes and is generally based on volume alone. Because a surcharge typically is based on the pounds of waste above "normal," there is an economic incentive for facilities to reduce the strength of these wastes. An example of how to calculate a surcharge is provided below. Note, even if a POTW uses a surcharge system, they will also impose a limit, above which you cannot discharge.

Example Surcharge Calculation⁴. The total amount of BOD in your food processing facility's wastewater (BOD loading) can be calculated by multiplying the BOD concentration by the amount of effluent as follows:

$$\text{Amount of BOD} = \text{effluent (million gallons)} \times \text{BOD concentration} \times 8.34 \text{ (conversion factor)}$$

The monthly surcharge is based on the amount that the BOD concentration exceeds a specified level. Assume your food processing plant discharges 4.0 million gallons of wastewater per month with a BOD concentration of 2,500 mg/l and is subject to a surcharge on BOD in excess of 250 mg/l. To find the monthly surcharge cost, multiply the **excess** amount of BOD by the surcharge rate.

$$\text{Amount of BOD subject to surcharge} = (2,500 \text{ mg/l} - 250 \text{ mg/l}) \times 4.0 \text{ Mgal/month} \times 8.34 = 75,060 \text{ lbs/month}$$

If the surcharge rate is 10¢ per lb of excess BOD, the monthly cost is:

$$\text{Surcharge cost} = 75,060 \text{ lbs} \times 10¢/\text{lb} = \$7,506.00.$$

In addition to the charge for excess BOD and TSS, surcharges also may be used for excessively high levels of COD and TKN.

4.5 How Do I Dispose of Industrial Sludge?

Industrial sludge is defined as sludge generated at an industrial facility during the treatment of industrial wastewater with or without combined domestic sewage. The way you choose to dispose of your industrial sludge determines how it is regulated:

- c The application of industrial sludge to land is regulated under 40 CFR 257.

⁴ North Carolina Agricultural Cooperative Extension Service. "Bank or Drain: Cut Waste to Reduce Surcharges for Your Dairy Plant," North Carolina Pollution Prevention Pays Program. CD-26. March 1996. (JWM.) [Http://www.bae.ncsu.edu/baeprogams/extension/publicat/wqwm/cd26.html/](http://www.bae.ncsu.edu/baeprogams/extension/publicat/wqwm/cd26.html/).

- C The disposal of industrial sludge in a municipal solid waste landfill is regulated under 40 CFR 258. Although pollutant limits are not imposed under this regulation, sludge to be disposed of must be nonhazardous, as demonstrated by using the Toxicity Characteristic Leaching Procedure (TCLP) and passing a paint filter test. Contact your municipal solid waste landfill for more information on industrial sludge disposal requirements.

Note: Industrial sludge produced by wastewater treatment processes at your food processing facility is **not regulated** under EPA's biosolids rule (40 CFR 503) which allows beneficial uses of sludge generated from treatment of **domestic** wastewater and sludge generated from **municipal** wastewater treatment plants.

4.6 How Do I Comply With Oil Pollution Prevention Requirements?

4.6.1 Introduction and Background

Food processors today use oils for many purposes, including cooking oil for frying, food grade hydraulic oil for moving product, and/or diesel fuel for vehicles and as backup for boilers. Also several segments of the industry refine and/or process animal and vegetable oils for food and/or non-food uses such as soaps, inks, paint or varnish, resins and plastics, lubricants, fatty acid and other products. Non-food uses of vegetable oils are increasing with a corresponding increase in the amounts of these oils being produced and/or stored at refineries and bulk transportation facilities. Facilities that store petroleum and nonpetroleum oils (e.g., vegetable oils and animal fats) must follow Oil Pollution Prevention Regulations, also known as the Spill Prevention, Control and Countermeasures (SPCC) Regulation.

Oil discharges can have a variety of impacts on terrestrial and aquatic ecosystems, and on human drinking water resources and water treatment plants. Petroleum oil spills can also create the potential for explosion and fires, that, in turn, may lead to more equipment failures, more spills, and may endanger people as well as wildlife. Like petroleum oils, vegetable oils and animal fats and their constituents can severely harm aquatic and terrestrial organisms and their habitats, foul shorelines, clog drinking water treatment plants, upset or disable a wastewater treatment plants, and catch fire when ignition sources are present.

EPA issued the SPCC regulation in 1973 (40 CFR 112) to address the oil spill prevention provisions contained in the Clean Water Act (CWA) of 1972.⁵ The main objective of the SPCC program is to prevent oil spills from regulated aboveground and underground storage tanks from reaching navigable waters of the U.S. or adjoining shorelines (see Section 4.3 *Am I A Direct Discharger?* for a definition of navigable waters). In 1990, Congress passed the Oil Pollution Act (OPA) that amended Section 311 of the CWA to require "substantial harm" facilities to develop and implement facility response plans (FRPs) (see Section 4.6.3 *Facility Response*

⁵ EPA's Oil Program Center, Office of Emergency and Remedial Response (OERR), is revising the SPCC regulation and expects to finalize it in mid-1999. Some SPCC criteria and other provisions may change as a result. This regulatory revision pulls together changes that EPA has proposed to the SPCC regulation in three separate Federal Register notices -- one each in 1991, 1993 and 1997.

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Plans). FRPs help facility owners/operators develop a response organization and identify the resources needed to respond to an oil spill adequately and in a timely manner. A unique aspect of these regulations is that unlike many other EPA programs, EPA may not delegate implementation of the SPCC regulation and the FRP regulation to state or tribal governments. States, however, may have their own requirements; therefore be sure to contact your state agency to find out about applicable requirements.

What is an Oil?

Oils are defined under several statutes including the CWA and its amendments under the Oil Pollution Act (OPA) of 1990. As a result, overlapping regulatory interpretations exist. For this reason, the EPA and the U.S. Coast Guard (USCG) are currently developing a nationally consistent program policy and methodology for facilities to determine whether a given substance is considered an oil under the existing CWA.

Under the CWA, the definition of oil includes oil of any kind and any form, such as petroleum and nonpetroleum oils. Generally, oils fall into the following categories: crude oil and refined petroleum products, edible animal and vegetable oil, other oils of animal or vegetable origin, and other nonpetroleum oils.

Many substances are easily recognizable as oils (e.g., gasoline, diesel, jet fuel, kerosene, and crude oil). Under the CWA definition, many other substances are considered oils which may not be easily recognizable by the industry, including mineral oil, the oils of vegetable and animal origin and other nonpetroleum oils. Therefore, your facility should work closely with the EPA and USCG (if applicable) to make determinations for the substances you store, transfer, or refine.

EPA's regulation requires facilities to prepare a plan and implement measures to prevent and control spills, regardless of the cause (e.g., human operational error, equipment failure or natural causes, such as lightning striking a tank). Facilities that fully comply with the requirements reduce the number and severity of discharges, thereby reducing the high costs of environmental cleanup or the additional permitting requirements that could be imposed in the event of a discharge. Facilities that are not in compliance are at greater risk to experience an oil spill that may result in a discharge into a navigable waterway or adjoining shoreline. The cost of cleanup would not only include repairing the damage to the facility (e.g., soil removal or equipment repair), but could extend beyond the facility's boundaries to affected offsite areas. Regulatory agencies may require modifications to operations or revisions to plans.

Use of Terms: *The following terms are used throughout this section: "spill," "discharge," and "release." They are used either as they appear in the regulations or as seems most appropriate for the discussion. Please refer to the regulations for specific definitions.*

4.6.2 SPCC Requirements

Nontransportation-Related Facilities

The SPCC requirements (40 CFR 112.3 through 112.7) of the Oil Pollution Prevention regulation apply to **nontransportation-related facilities** that meet these criteria:

- c Could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States or upon the adjoining shorelines, AND
- c Have (1) an aboveground oil storage capacity of more than 660 gallons in a single container; or (2) a total aboveground oil storage capacity of more than 1,320 gallons; or (3) a total underground storage capacity of more than 42,000 gallons.

Storage Capacity: Remember, the requirements apply specifically to your storage capacity, regardless of whether the tanks are completely filled.

Many facilities have aboveground storage tanks (ASTs) with storage capacities that meet the above criteria and therefore, must comply with the SPCC requirements. In addition to these federal requirements, there are often state and local requirements for ASTs. These requirements typically incorporate standards established by organizations such as the National Fire Protection Association and the American Petroleum Institute. Construction, design, and operation requirements for ASTs are typically governed by state and local fire marshals or an environmental officer. In addition to consulting with your fire marshal, you should also check with your state regulatory agency for information on additional AST requirements.

According to the SPCC proposed rule (October 21, 1991; 56 FR 54612), an AST is a tank or combination of tanks (including the connecting pipes) used to contain regulated substances that breaks the natural grade of the land.

Your AST system(s) may not be subject to EPA's SPCC regulations (40 CFR 112) if it meets the following conditions:

- Your onshore or offshore facility which, due to its location, could **not** be reasonable expected to discharge oil into or upon navigable water of the U.S. or adjoining shorelines.
- Equipment or operations of vessels or transportation-related facilities (both onshore or offshore) are subject to the authority of the Department of Transportation, with certain exceptions.⁶

⁶ The exceptions are that certain offshore facilities along the Great Lakes, rivers, coastal wetlands, and the Gulf Coast barrier islands are subject to EPA's Oil Pollution Prevention regulations, as a result of the Department of Interior's (DOI's) re delegation of authority for these facilities to EPA in a *Memorandum of Understanding* among EPA, DOI and DOT, effective February 3, 1994.

If your facility is subject to the SPCC requirements based on the above description, EPA requires you to prepare an SPCC plan (see below) and conduct an initial screening to determine whether you are required to develop an FRP. Those facilities that could cause “substantial harm” to the environment must prepare and submit an FRP to EPA for review (see Section 4.6.3 *Facility Response Plans*).

SPCC-regulated facilities must also comply with other federal, state, or local laws, some of which may be more stringent.

The SPCC Plan

The SPCC Plan is a written site-specific description detailing how a facility’s operation complies with 40 CFR 112. In order to comply with 40 CFR 112, the SPCC Plan must be a carefully thought out plan, prepared in accordance with good engineering practices and which has the approval at a level with the authority to commit the necessary resources.

Regulated facilities in existence at the time the regulation went into effect, on January 10, 1974, were required to have a Plan prepared within 6 months of the effective date of the regulation and to have fully implemented the Plan within one year of the effective date of the regulation.

Newly constructed facilities must prepare an SPCC Plan within 6 months of the date they commence operations and to fully implement the Plan within one (1) year of starting operations. If you, as facility owner or operator, are unable to implement an SPCC Plan within this time frame due to circumstances beyond your control, you may request an extension, in writing, from the EPA Regional Administrator by following the procedures explained in 40 CFR 112.3(f).

While each SPCC Plan is unique, certain elements must be included in order for the SPCC Plan to comply with the provisions of 40 CFR 112. If a section does not apply to your facility, your Plan must state this. These elements include, but are not limited to, the following:

- C **Professional Engineer (PE) certification:** The SPCC Plan must be reviewed and certified by a registered PE who is familiar with the facility and with 40 CFR 112. The engineer’s name, registration number and state of registration must be included as part of the SPCC Plan. The engineer’s seal should be affixed to the Plan as part of the certification. By certifying the Plan, the engineer is attesting that he/she has examined the facility and is familiar with the facility, its SPCC Plan and the SPCC requirements, and that the Plan has been prepared in accordance with good engineering practices. In order to satisfy the requirements of 40 CFR 112.5, all subsequent amendments must also be certified by a PE, as described above.
- C **SPCC Plan Kept Onsite:** If your facility is manned at least 8 hours a day, you are required to maintain a complete copy of the SPCC Plan onsite. If the facility is manned less than 8 hours a day, the Plan must be kept at the nearest field office that is manned. The Plan must be made available for review by the EPA Regional Administrator or his/her representative during normal business hours.
- C **Management Approval:** The SPCC Plan have the full approval of management at a level with the authority to commit the resources necessary to implement the Plan. The appropriate manager’s signature should be included in the SPCC plan.

- C **Plan Sequence Follows 40 CFR 112:** The SPCC Plan must include a complete discussion of your facility's conformance with all applicable SPCC requirements and shall follow the sequence of 40 CFR 112.7. To help facilities in preparing and reviewing SPCC Plans, the EPA Oil Program developed a sample Plan that you may obtain from your EPA Regional Office.

All spill prevention practices used at your facility must be addressed with a complete and accurate description included in the Plan. It is possible that some items in 40 CFR 112 are not applicable to your facility. Every item must be addressed in the Plan, even if your facility does not have every item. For example, under facility transfer operations, the first item requires that buried piping be protectively wrapped or cathodically protected. Some facilities may not have any buried piping. For these cases, the SPCC Plan should indicate that there is no buried piping at the facility.

- C **Spill History:** If your facility has experienced one or more spill events within 12 months prior to January 10, 1974, you should include a written description of each spill, corrective actions taken, and plans for preventing recurrence in the SPCC Plan.

- C **Spill Prediction:** Where industry experience indicates a reasonable potential for equipment failure, the SPCC Plan should include a prediction of direction, rate of flow, and total quantity of oil that could be discharged from your facility as a result of each major type of failure. Such failures include, but are not limited to, tank failure due to overflow, rupture or leakage; pipeline failure due to rupture or corrosion; leaking flanges, gaskets, expansion joints, valves, or catch pans; spills from bulk oil loading or unloading operations; and leaks due to other causes, such as failure of wastewater or storm water treatment or disposal systems.

Topographic maps are often useful for predicting and illustrating the direction of flow and bodies of water which might be affected by a spill.

- C **Plan review:** The SPCC Plan must be amended whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential to discharge oil into or upon navigable waters or adjoining shorelines.

In addition, the owner or operator of a regulated facility, is required to review and evaluate the SPCC Plan at least once every three (3) years from the time the facility becomes subject to the SPCC requirements. Within six (6) months after this review and evaluation, you must amend the SPCC Plan to include more effective prevention and control technology:

- if such technology will significantly reduce the likelihood of a spill event from the facility, **and**
- if the technology has been field-proven at the time of the review.

In order to satisfy the requirements of 40 CFR 112.5, all such amendments must be certified by a PE, as described earlier in this section.

- C **Amendment by EPA Regional Administrator (RA):** After review of the SPCC Plan and any other information submitted, the RA may require you to amend the SPCC Plan if (1) it does not meet the SPCC requirements or (2) such amendment is necessary to prevent or contain future discharges from the facility. The RA will

consider any recommendations made by the state agency in charge of water pollution control during the review process. If the RA proposes that the SPCC Plan be amended, the RA shall provide written notification to you specifying the terms of the proposed amendment. Upon receipt of this notification, you will then have 30 days in which to respond, in writing, to the proposal, and offer any additional information, arguments or counterproposals.

The RA will then review all available information and either notify you of any amendment required or rescind the original notice. Usually, if an amendment is required, it must be made part of the SPCC Plan within 30 days after the final EPA notice and implemented as soon as possible, but not later than six (6) months after you amend the Plan (unless the RA specifies another date). You may appeal an RA's decision regarding any amendment, in writing, to EPA's Administrator within 30 days of receipt of the RA's final notice. You must also send a copy of the appeal to the RA.

- C **Secondary Containment or Contingency Plans:** You are required to install appropriate containment and diversionary structures or equipment, such as dikes, berms, and retaining walls, as described in 40 CFR 112.7, to prevent discharged oil from reaching navigable water, unless it can be clearly demonstrated that installation of such structures or equipment is not practical or practicable. Impracticability pertains primarily to those cases where severe space limitations or other physical constraints may preclude installation of structures or equipment to prevent oil from reaching navigable water. Demonstrating impracticability on the basis of economic considerations is not acceptable.

In the event that such impracticability can be demonstrated, you must provide the following plan and resources in place of containment structures or equipment:

- A strong oil spill contingency plan following the provisions of 40 CFR 109, and
- A written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantities of oil discharged.

*Note: FRPs developed by **substantial harm** facilities may meet the above requirements for an oil spill contingency plan (see Section 4.6.3 Facility Response Plans).*

- C **Spill Reporting:** First, you must report oil releases to the **National Response Center at 1-800-424-8802 or 703-412-9810 (Washington, D.C. area)** (see Section 4.6.4 *Oil Spill Notification, Response, and Recovery*).

In addition, the owner or operator of a regulated facility must submit, in writing, certain information including the SPCC Plan to the EPA RA within 60 days, if the release meets either of the following conditions:

- **Either** a single discharge of more than 1,000 gallons of oil;
- **Or**, two reportable spills/discharges of oil in harmful quantities, during any 12-month period, into or upon navigable waterways, shorelines, etc.

The required information includes:

- Name of the facility;
- Name(s) of the owner or operator of the facility;
- Location of the facility;
- Date and year of initial facility operation;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- Description of the facility, including maps, flow diagrams and topographical maps;
- The cause(s) of such spill(s), including a failure analysis of the system or subsystem in which the failure occurred;
- Corrective actions and/or countermeasures taken, including a complete description of equipment repairs or replacements; and
- A copy of the SPCC Plan and any other information pertinent to the Plan or the spill(s).

A complete copy of all information sent to the RA must also be sent to the state agency in charge of water pollution control activities.

- C **Performance-Based SPCC Requirements:** In addition to general requirements, the SPCC rule also has performance-based requirements in 40 CFR 112.7 for drainage control; bulk storage tanks; tank car and truck loading and unloading racks; various onshore and offshore production facility operations; onshore and offshore oil drilling, production, and workover facilities; security; and training. These specific requirements are not discussed further in this guidance. Please refer to 40 CFR 112.7 for more information.

4.6.3 Facility Response Plans (FRPs)

In 1990, Congress passed the Oil Pollution Act (OPA) which amended Section 311 of the Clean Water Act to require “substantial harm” facilities to develop and implement FRPs. EPA’s FRP requirements, which were published as a final rule in the Federal Register on July 1, 1994, are codified at 40 CFR 112.20 and 112.21 and include Appendices A through F. Under the FRP requirements, owners and operators of facilities that could cause “substantial harm” to the environment by discharging oil into navigable water bodies or adjoining shorelines must prepare plans for responding, to the maximum extent practicable, to the worst case discharge and to a substantial threat of such a discharge of oil.

For more information on FRPs, access EPA’s Oil Program webpage at <http://www.epa.gov/oilspill/>.

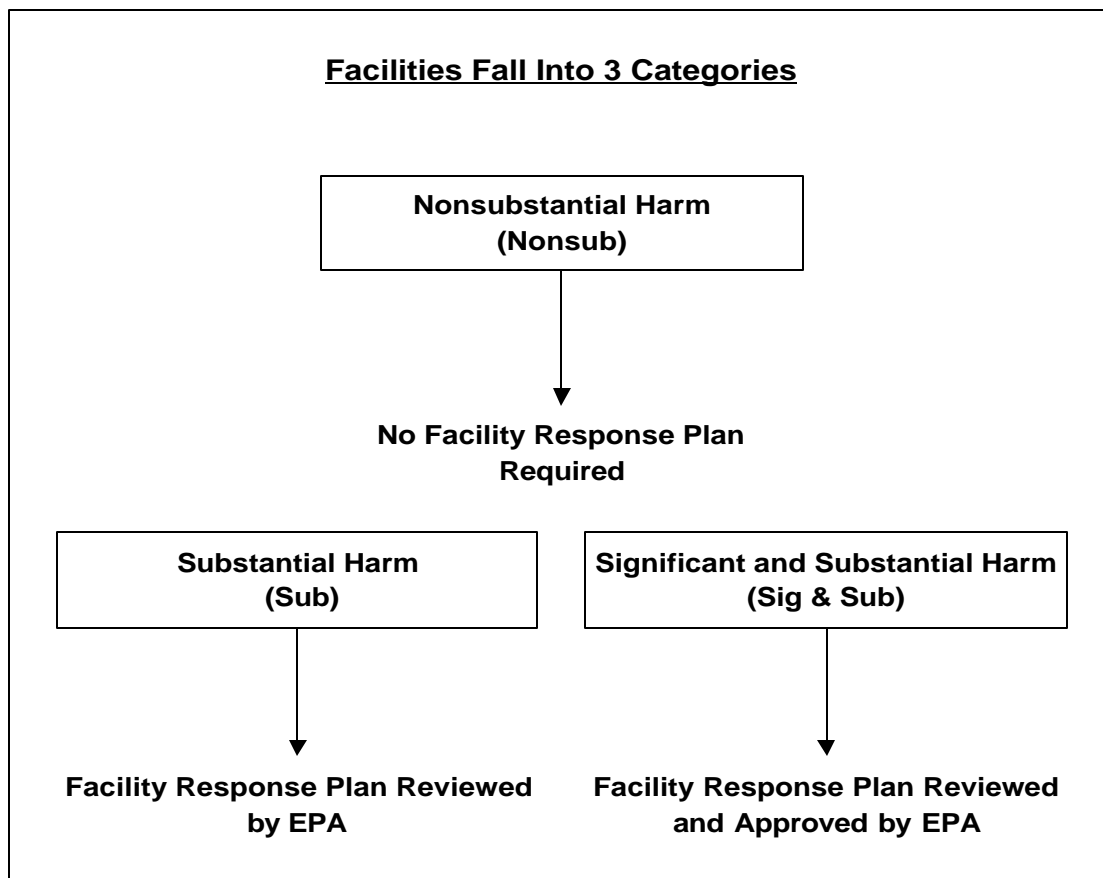
Determination of Response Plan Applicability

Owners or operators of all facilities subject to the Oil Pollution Prevention Regulation must familiarize themselves with the rule to determine whether their facility meets the “substantial harm” criteria. Facilities subject to the FRP requirements under 40 CFR 112.20 are referred to either as **substantial harm** facilities or **significant and substantial**

Although you don’t have to submit it to EPA, your facility should maintain the Certification of the Applicability of the Substantial Harm Criteria with your SPCC plan.

harm facilities. EPA has different roles when handling the FRPs for these 2 categories of facilities. FRPs from substantial harm facilities **are reviewed** by EPA while FRPs from significant and substantial harm facilities are **reviewed and must be approved** by EPA (see Figure 4-1 *Determination of Response Plan Applicability*). Facilities that do not fall into these two categories do not have to submit FRPs. Under 40 CFR 112.20 (e), facilities that **do not** meet the “substantial harm” criteria must document this determination by completing the “Certification of the Applicability of the Substantial Harm Criteria Checklist,” provided as 40 CFR 112, Appendix C, Attachment C-II. This certification should be maintained with the facility’s SPCC plan.

Figure 4-1. Determination of Response Plan Applicability



Substantial Harm Facilities

Facilities that are considered to pose a threat of substantial harm are required to prepare and submit FRPs. EPA recognizes two ways in which a facility may be identified as posing a risk of substantial harm:

- **Either** through a self-determination process (EPA has established criteria located in 40 CFR 112.20 to assist facilities in making the determination - see below),

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- **Or** by a determination of the EPA Regional Administrator (RA).

As outlined in 40 CFR 112.20 (f)(1), your facility has the potential to cause substantial harm if:

- C **Either** the facility transfers oil over water to or from vessels **and** has a total oil storage capacity, including both aboveground storage tanks (ASTs) and underground storage tanks (USTs), greater than or equal to 42,000 gallons;
- C **Or** the facility's total oil storage capacity, including both ASTs and USTs, is greater than or equal to one million gallons **and one of the following is true:**
 - The facility does not have secondary containment for each aboveground storage area sufficient to contain the capacity of the largest AST within each storage area plus freeboard to allow for precipitation;
 - The facility is located at a distance such that a discharge could cause injury to fish and wildlife and sensitive environments;
 - The facility is located at a distance such that a discharge would shut down a public drinking water intake; or
 - The facility has had a reportable spill greater than or equal to 10,000 gallons within the last five years.

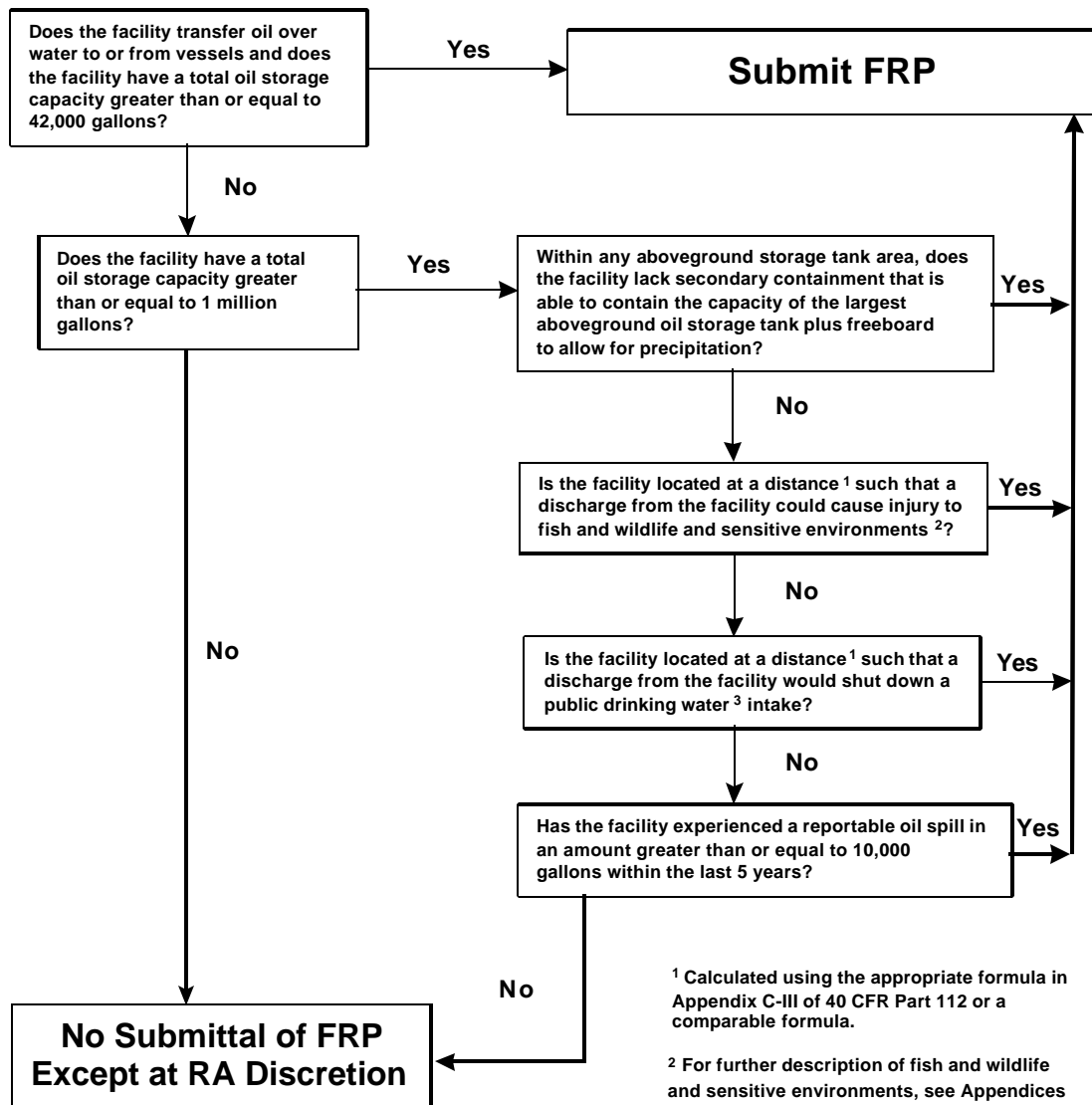
EPA's RA may determine whether a particular facility may cause "substantial harm." EPA's RA may consider factors similar to the self-selection criteria, as well as other factors, including the type of transfer operations at a facility, the facility's oil storage capacity, lack of secondary containment, proximity to environmentally sensitive areas or drinking water intakes, and/or the facility's spill history. These factors and how they are applied are shown in Figure 4-2 *Flowchart of Criteria for Substantial Harm* shown on the next page and also in 40 CFR 112, Appendix C. The EPA RA will notify your facility if EPA has determined that your facility poses a threat of "substantial harm."

Significant and Substantial Harm Facilities

EPA is also required to identify a **subset** of substantial harm facilities that could cause **significant and substantial harm** to the environment upon a release of oil. EPA bases its determination on factors similar to the criteria used to determine substantial harm, as well as the age of tanks, proximity to navigable water, and spill frequency. Facilities are notified by EPA in writing of their status as posing significant and substantial harm. If your facility is notified by EPA, you must submit your FRP to EPA for review and approval. The RA will review your FRP and inspect your facility for viability and compliance with the regulations before EPA approves the plan.

Remember: FRPs from substantial harm facilities are reviewed by EPA while FRPs from significant and substantial harm facilities are reviewed and must be approved by EPA.

Figure 4-2. Flowchart of Criteria for Substantial Harm



¹ Calculated using the appropriate formula in Appendix C-III of 40 CFR Part 112 or a comparable formula.

² For further description of fish and wildlife and sensitive environments, see Appendices I, II and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments: (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

³ Public drinking water intakes are analogous to public water system as described at 40 CFR 143.2(c)

FRP Development

If it has been determined, either through the self-selection process or by notification from the EPA RA, that your facility poses a threat of “substantial harm” to the environment, you must prepare and submit a FRP to the appropriate EPA Regional Office.

To assist you in preparing a FRP, EPA has prepared and included a “model facility response plan” in 40 CFR 112.2, Appendix F. EPA recognizes that many facilities may have existing *response* plans prepared to meet other requirements. Under OPA, you do not need to prepare a separate FRP provided that your original response plan:

EPA also recognizes that many facilities have established SPCC plans. Although response plans and prevention plans are different, and should be maintained separately, some sections of the plans may be the same. Under OPA regulations, you are allowed to reproduce or use those sections of the SPCC plan in the FRP.

- (1) satisfies the appropriate requirements and is equally as stringent;
- (2) includes all elements described in the model plan;
- (3) is cross-referenced appropriately; and
- (4) contains an action plan for use during a discharge.

FRPs must:

- C Be consistent with the National Contingency Plan (NCP) and the Area Contingency Plans.

The NCP, also called the National Oil and Hazardous Substances Pollution Contingency Plan, is the federal plan for responding to both oil spills and hazardous substance releases. See <http://www.epa.gov/oilspill/ncp> for more information.

- C Identify a qualified individual having full authority to implement removal actions, and require immediate communication between that person and the appropriate federal authorities and responders.
- C Identify and ensure availability of resources to remove, to the maximum extent practicable, a worst-case discharge.
- C Describe training, testing, unannounced drills, and response actions of persons at the facility.
- C Be updated periodically.
- C Be submitted for approval with each significant change.

Deadlines for Preparing and Submitting FRPs⁷

The time that you have to prepare and submit a FRP will vary depending on several factors, including the following:

- **Notification from EPA Regional Administrator:** If EPA notifies your facility that you are required to submit a facility response plan, you must prepare and submit a plan within **six (6) months**.
- **Newly Constructed Facilities:** If your facility is newly constructed, you are required to submit the FRP **prior to the start of operations**. After sixty (60) days, you must make adjustments to the FRP to reflect changes that occur during the startup phase and resubmit the FRP.
- **Planned Facility Changes:** If your facility undergoes a planned change in design, construction, operation, or maintenance that places it in the designation of a **substantial harm facility**, then you must submit a FRP **prior to the start of operations** of the portion of your facility undergoing the changes.
- **Unplanned Facility Changes:** If your facility falls under the substantial harm facility designation because of an unplanned event or change in characteristics, then you must submit your FRP **within six (6) months of the unplanned event**.

Response Plan Maintenance

Under 40 CFR 112.20(g), facilities must periodically review their response plans to ensure consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Area Contingency Plans (ACPs). Consequently, a facility that is required to prepare a response plan must review relevant portions of the NCP and the applicable ACPs annually and update its FRP as appropriate. You must submit revised portions of your response plan within 60 days of each facility change, that may materially affect (1) the response to a worst case discharge or (2) the implementation of the response plan.

Area Contingency Plans (ACPs) include detailed information about resources (e.g., equipment and trained response personnel) available from the government agencies in the area. They also describe the roles and responsibilities of each responding agency during a spill incident. You can order copies of ACPs from the National Technical Information Service (NTIS) by calling 1-800-553-6847. To obtain the NTIS ordering number for your area's ACP, first call the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

⁷ The initial statutory deadline for "substantial harm facilities" **either** to submit FRPS **or** to stop handling, storing or transporting oil was February 18, 1993. EPA's regulatory deadline for "substantial harm facilities" and "significant and substantial harm facilities" to submit FRPs or stop handling, storing or transporting oil was August 30, 1994, the effective date of the FRP rule.

Recordkeeping

FRP Requirements Not Applicable: If you determine that the response planning requirements at 40 CFR 112.20 do not apply to your facility, then you must certify and maintain a record of this determination using 40 CFR 112, Appendix C, Attachment C-II.

FRP Requirements Applicable: If your facility is subject to the response planning requirements at 40 CFR 112.20, you are required to maintain the response plan at the facility. You are also required to maintain updates to the plan to reflect material changes to the facility and to log activities such as discharge prevention meetings, response training drills, and exercises. You must keep the records of these activities for a period of five years.

Training and Response Drills

All facilities (i.e., “substantial harm” and “significant and substantial harm” facilities) subject to facility response planning requirements must address training and response drills. Oil spill response training is an important element in EPA’s oil spill prevention and preparedness efforts. Because operator error is often the cause of an oil spill, training and briefings are critical for prevention of a spill as well as response to a spill. Training encourages up-to-date planning for the control of, and response to, an oil spill and also helps to sharpen operating and response skills, introduces the latest ideas and techniques, and promotes interaction with the emergency response organization and familiarity with the facility’s SPCC and FRP plans.

Under 40 CFR 112.20(h)(8), FRPs must include:

- C Information about self-inspection drills, exercises, and response training, including descriptions and logs of training and drill or exercise program; and
- C Documentation of tank inspections, equipment inspections, response training meetings, response training sessions, and drills and exercises.

Consequently, FRPs may be revised based on evaluations of the drills and exercises.

Facility Response Training Programs.

Under 40 CFR 112.21 of the Oil Pollution Prevention regulation, facilities are required to develop and implement facility response training programs. It is recommended that the training program be based on the **USCG Training Elements for Oil Spill Response**, as applicable to facility operations. An alternative program can also be acceptable if approved by the Regional Administrator.

Facility Response Drills/Exercises. Under 40 CFR 112.21, your facility is also required to develop and implement a program of response drills and exercises, including evaluation

The PREP guidelines (USCG-X0191) and the Training Reference for Oil Spill Response (USCG-X0188) are available by mail or fax:

*TASC Department Warehouse
3341Q 75th Avenue
Landover, MD 20785
FAX: (301) 386-5395*

When requesting copies, please indicate the document name and publication number.

procedures to test the effectiveness of your response plan. A program that follows the National Preparedness for Response Exercise Program (PREP) will meet EPA's exercise requirements. An alternative program can also be acceptable if approved by the EPA RA.

4.6.4 Oil Spill Notification and Response

Notification - The "One" Immediate Phone Call to the NRC

NATIONAL RESPONSE CENTER

1-800-424-8802

In the Washington, D.C. area:

703-412-9810

**For more information on the NRC, access
<http://www.epa.gov/oilspill/NRC>**

- Ø Immediately notify the National Response Center (NRC) of discharges/releases of oils and hazardous substances by calling the NRC number.
- Ù If notifying the NRC is not practicable, then immediately notify the pre-designated On-Scene Coordinator of EPA or the USCG. (This means that you must know who your designated On-Scene Coordinator is before the release or discharge occurs.)
- Ú As required by the relevant Area Contingency Plan, report spills to the state, the tribal government, the territory or commonwealth where the spill occurred.

When an oil spill enters into or threatens any navigable water in the United States, coordinated teams of local, state, and national personnel are called upon to help contain the spill, clean it up, and assure that damage to human health and the environment is minimized. EPA has established requirements for reporting spills into navigable waters or adjoining shorelines. Specifically, facilities are required to report discharges of oil in quantities that may be harmful to public health or welfare or the environment.

EPA has determined that discharges of oil in quantities that may be harmful include those that:

- C Violate applicable water quality standards;
- C Cause a film or "sheen" upon or discoloration of the surface of the water or adjoining shorelines.

- c Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Also see related notification and reporting requirements for the discharge/release/spill of hazardous substances under EPCRA and CERCLA summarized in this guide in Section 7.3 *Emergency Release Notification*. For a quick, multimedia reference guide to the notification requirements under CWA, OPA, RCRA, EPCRA, CERCLA, CAA and OSHA, see Section 9.3 *Notification and Response Requirements*

Any person in charge of a vessel or onshore or offshore facility should notify the **National Response Center (NRC) at 1-800-424-8802 or 703-412-9810 (Washington, D.C. area)** as soon as he/she had knowledge of a discharge from a vessel or facility. Spills or releases of oil which reach navigable waters or adjoining shoreline (including storm drains) or land areas which may threaten waterways must always be reported to the NRC.

You should also be aware of state, tribal, and local requirements for spill reporting. For example, there may be a requirement to report all spills meeting certain quantity thresholds even if the spill does not leave the contained area.

Reporting to the National Response Center



When you contact the National Response Center, the staff person will ask you for the following information:

- ? Your name, location, organization, and telephone number.
- ? Name and address of the party responsible for the incident.
- ? Date and time of the incident.
- ? Location of the incident.
- ? Source and cause of the release or spill.
- ? Types of material(s) released or spilled.
- ? Quantity of materials released or spilled.
- ? Danger or threat posed by the release or spill.
- ? Number and types of injuries.
- ? Weather conditions at the incident location.
- ? Any other information that may help emergency personnel respond to the incident.

The NRC records and maintains all spill reports in a computer database called the Emergency Response Notification System (ERNS), which is available to the public. The NRC relays the spill information to the EPA and U.S. Coast Guard (USCG), depending on the location of the incident.

Specifically, the NRC notifies representatives of EPA or the USCG, known as On-Scene Coordinators (OSCs) are notified. The OSC is the federal official charged with directing a spill

response through the Unified Command/Integrated Command System adopted by EPA and USCG. This intergovernmental coordinating system encourages, wherever possible, shared decision making by the federal lead response agency (EPA or USCG), the state(s) and the party responsible for the discharge/release.

Spill Response

The first and most immediate response is that of your facility. For this reason, the quantity, operation, and location of your facility's response equipment and supplies are all critical to effective oil recovery.

- C **SPCC/FRP Regulated Facilities (or Substantial Harm Facilities):** Within the SPCC-regulated community, facilities that may cause substantial harm to the environment or exclusive economic zone based on the quantity and location of their oil storage are required to prepare FRPs to ensure that these facilities have the capability to respond to worst case scenario discharges. FRPs greatly assist the facility and response agencies to expedite and coordinate cleanup efforts.

- C **Other SPCC Regulated Facilities:** It is recommended that all other facilities in the SPCC-regulated community be prepared to respond to a spill by identifying control and response measures in their SPCC Plans. Every facility should have appropriate spill response equipment available and easily accessible. Absorbent pads and booms, disposal containers or bags, shovels, an emergency response guidebook, and a fire extinguisher are essential components of a spill kit. Portable pumps may also be a good investment. It is also recommended that facilities coordinate with local responders, other nearby facilities, and contractors before a spill occurs so that response is accomplished most efficiently. Facility personnel, including seasonal employees, must be educated and trained in spill response, notification, and oil recovery. By being prepared to respond, the impact of a discharge on human health or the environment may be minimized and cleanup costs and fines resulting from improper notification or response reduced.

- C **First Response:** In the event of an oil spill, the facility response plan is immediately activated. Depending on the nature of the spill, local, area, regional, or national plans may also be activated. The OSC will activate these plans if the facility is not equipped or capable of handling the response.

- C **On-Scene Coordinators:** The designated OSC from EPA or USCG is responsible for determining how to respond to the spill, i.e., determining the resources, both personnel and equipment needed. The OSC does this based on his/her assessment of several factors, including the following: the magnitude and complexity of the spill; the availability of appropriate response equipment and trained personnel; and the ability of the responsible party, or local and/or state responders to respond to the spill.

Although the OSC is responsible for coordinating federal efforts with local, state and regional response efforts, in practice the role of the OSC varies. Depending on the OSC's assessment, he/she may do the following: direct the response; direct the response in cooperation with other parties; oversee that the responses is conducted by other parties; provide limited or periodic oversight; or determine that a federal response is not needed.

For example, small spills may be cleaned up by the facility (or responsible party) or by local response agencies, while larger spills may require regional response efforts. In either cases, the OSC is required to oversee and monitor the spill response to make sure that all appropriate actions to prevent threats to human health or the environment are taken. If, however, a facility is handling a smaller spill adequately, the OSC may not go to the site.

- C **Oil Recovery:** The OSC, response teams, and a network of experienced agencies will decide on the most effective method of cleanup. These agencies must coordinate cleanup efforts carefully and efficiently to protect response personnel, recreational areas, drinking water reservoirs, and wildlife from the potentially catastrophic effects of an oil spill.

Selecting the best method, or combination of methods, for recovering oil after a spill is based on several factors. The type and amount of oil spilled and the water body are the most important considerations. The mechanisms most frequently employed to control oil spills and minimize their impact on human health and the environment fall into four broad categories: (1) mechanical containment or recovery includes booms, barriers, skimmers, and sorbent materials; (2) chemical and biological methods include dispersants, gelling agents, and biological agents; (3) physical methods include wiping, pressure washing, raking, and bulldozing, also scare tactics, such as floating dummies, to keep birds away from a spill area; and (4) natural processes, which include evaporation, oxidation, and biodegradation.

For more information, visit EPA's Oil Program at <http://www.epa.gov/oilspill/>.

4.7 Compliance Issues For Selected Activities

4.7.1 Land Application of Wastewater

Land application. Land application is the process of discharging wastewater from an industrial facility, such as a food processing facility, to land or agricultural crops. This process can be beneficial to the crops which utilize the water and the carbohydrates and nutrients in the wastewater. Land application generally is regulated by the state and may require a permit. The permit is designed to regulate contaminants in the wastewater, and ensure that the wastewater does not run off into nearby waterways.

Some typical requirements that may be included in a permit for the land application of wastewater include:

- A "no discharge" requirement prohibiting runoff to waterways
- Prohibitions of land application (including spraying) during wet weather or when the ground is frozen
- Monitoring of pollutant levels in the wastewater or sludge
- Limits on the amount of pollutants and the amount of wastewater applied.

- Installation of monitoring wells and monitoring of groundwater
- Installation of a pretreatment system to pretreat the wastewater before land application.

Check with your state regulatory agency for more information on the requirements for land application of industrial wastewater.

Overland flow treatment system. Some facilities may use an overland flow treatment system for treating their wastewater. This type of system, which results in discharges to a receiving water, requires a NPDES permit. Check with EPA or your state regulatory agency for more information.

4.7.2 Construction or Plant Modification Activities

There are other federal regulations that potentially apply to construction or plant modification activities at your facility, including regulations addressing wetlands and endangered species. These are discussed below.

Wetlands. Activities, such as construction or plant modification, at your facility that impact wetlands may require a permit. Wetlands, which commonly are called swamps, marshes, fens, bogs, vernal pools, playas, and prairie potholes, are a subset of “waters of the United States” as defined in Section 404 of the CWA. The placement of dredge and fill material into wetlands and other water bodies (i.e., waters of the United States) is regulated by the U.S. Army Corps of Engineers (Corps) under 33 CFR 328. The Corps regulates wetlands by administering the CWA Section 404 permit program for activities that impact wetlands. EPA’s authority under Section 404 includes veto power of Corps permits, authority to interpret statutory exemptions and jurisdiction, enforcement actions, and delegating the Section 404 program to the states.

Because wetlands and the regulations protecting them are dynamic, it is important to check with the Corps district office even if you think a permit may not be required for your activity. If your project area includes wetlands, the Corps district office also may suggest that your facility retain a consultant to delineate wetland boundaries. In addition to conducting the wetland delineation, some wetland consultants also can help with the permit application process.

In addition to federal regulations, some state and local governments have laws protecting wetlands. Laws may include those that require permits for construction in wetlands. To find out if your proposed activities require a state permit, contact the appropriate department (e.g., state department of water resources, natural resources, or the environment) in the state where the activities will take place.

Some states or local governments may have stricter wetland regulations than CWA Section 404, so if your activity does not require a Section 404 permit (and involves a wetland) you still should consult with the appropriate state agency.

Endangered or Threatened Species. The federal Endangered Species Act (ESA), administered by the U.S. Department of Interior’s (DOI) Fish and Wildlife Service (USFWS) and the Department of Commerce’s National Marine Fisheries Service (NMFS), establishes a program for the conservation of endangered and threatened species and the habitats in which they are found. State laws or regulations may be more, but not less restrictive, than the federal ESA or its regulations.

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If you are engaged in, or planning to engage in, activities such as construction or plant modification, you must be aware if any endangered or threatened species exist on the property involved, or if the property is considered part of a listed species' critical habitat. If neither is the case, the ESA does not apply. However, if the action will "take" a species or degrade critical habitat, some form of mitigating action must be taken to prevent harming the species. Contact your local USFWS endangered species coordinator or talk with a qualified consultant to clear up any specific questions relating to your facility's activities.

The term "take" includes harassing, harming, hunting, killing, capturing, and collecting.

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5. HOW DO I COMPLY WITH SAFE DRINKING WATER REGULATIONS?

As a food processing facility, you are responsible for the drinking water supplied to your employees and the water used in food processing operations. The Safe Drinking Water Act (SDWA) protects the water supply through water quality regulations and source protection, such as underground injection control (UIC) regulations. SDWA requirements apply to all public water systems (PWSs). Therefore, it is important that you determine whether you are a PWS, and if so, which SDWA requirements apply to your water system. This section explains the SDWA program and how you can comply with the regulations.

5.1 Introduction

The purpose of the SDWA is to protect public health by regulating PWSs and underground injection. EPA is responsible for writing regulations to carry out the provisions of the Act, including drinking water standards, monitoring/reporting, and public notification requirements. The entities that supply public water are responsible for making sure that the water meets EPA's standards.

SDWA 1996 Amendments. Since being passed by Congress in 1974, the SDWA has been amended twice, most recently in 1996. The 1996 SDWA Amendments provide:

- (1) **New and stronger approaches to prevent contamination of drinking water.** The Amendments established a strong new emphasis on preventing contamination problems through source water protection, capacity development, and operator certification programs.
- (2) **Better information for consumers, including “right to know.”** The Amendments specify that the public be provided with or given access to data collected, analyses done or implementation strategies developed under new SDWA programs through consumer confidence reports and other provisions for improved consumer information.
- (3) **Regulatory improvements.** Regulatory improvements by EPA include: (a) new risk-based contaminant selection; (b) cost-benefit analysis and research for new standards; (c) small system technologies, variances, and exemptions; (d) extension of compliance time frames; (e) monitoring reforms; and (f) streamlining of enforcement processes.
- (4) **New funding for states and communities through a Drinking Water State Revolving Fund.** One of the most notable features of the new law is the authorization for states to use State Revolving Funds (SRFs) for new prevention programs, such as source water protection, capacity development, and operator certification programs, as well as for the State's overall drinking water program.

For more information on the SDWA and its 1996 Amendments, see EPA's Office of Groundwater and Drinking Water website at <http://www.epa.gov/OGWDW/>.

Additional Requirements. In addition to EPA's SDWA requirements, water used in food processing operations must meet the Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) requirements. The FDA, under its good manufacturing practice regulations, requires that "any water that contacts food or food-contact surfaces shall be safe and of adequate sanitary quality" (Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food, 21 CFR Section 110.37). In addition, the USDA's Food Safety and Inspection Service (FSIS) sets standards for activities associated with the production of meat and poultry products, including standards involving water quality, and water use and reuse.

5.2 How Does the Program Work?

The federal drinking water program may be delegated to states if they meet requirements in the law and the regulations. This is known as primacy. Fifty-four of 56 states and territories have been delegated primacy to run the drinking water program. EPA sets standards and provides guidance, technical assistance, and some financing to these agencies. EPA has primacy in Wyoming, Washington, D.C., and all Tribal Lands, and may also take enforcement action in a primacy state where the state does not take an enforcement action in response to a violation. The primacy agency, whether EPA or a state, is responsible for tracking sample results, conducting detailed inspections called sanitary surveys, and taking enforcement actions such as imposing fines and penalties when necessary.

5.3 How Do I Know If I Am Regulated?

The SDWA regulations apply to you if your facility operates a **public water system (PWS)** or receives water from a PWS and provides treatment to it. Prior to 1996, SDWA defined a PWS as "a system for the provision to the public of **piped water for human consumption** if such system has at least fifteen service connections or regularly serves at least twenty-five individuals." The 1996 Amendments expanded the means of delivering water to include not only pipes, but also **other constructed conveyances**, such as ditches, waterways, flumes, mine drains, and canals. Furthermore, if a **water supplier** provides water to at least twenty-five individuals or fifteen connections at any time on or after August 6, 1998, the supplier is considered a PWS.

Public water systems are divided into three categories:

- **Community water systems.** Generally serve the same people year round (e.g., a small town).
- **Transient non-community systems.** Serve people only for a portion of the time (e.g., hotels, restaurants, or highway rest stops).

- c **Non-transient, non-community systems.** Systems that serve at least 25 people for over six months of the year, but the people generally do not actually live at the facility (e.g., schools or factories).

To understand whether your facility is a PWS, you should know the following information:

- (1) do you or another entity supply the water;
- (2) the number of people served by your system; and
- (3) their pattern of water use.

Your facility is most likely operating a non-transient, non-community water system if your sole source of drinking water is **not** from a municipal or district water supplier.

All PWSs must meet the national primary drinking water regulations (see below). In addition, some states regulate **smaller** facilities than EPA. Contact your state/territory/Tribal government to determine if any additional requirements that apply to your PWS.

Note: Even if a state/territory/Tribal government does not have primacy for the SDWA program, they may have additional requirements and should be contacted.

5.4 What Are The National Drinking Water Regulations?

Under the SDWA, EPA establishes national primary and secondary drinking water regulations designed to protect the public health and the aesthetic quality of the water.

- c **Primary drinking water regulations** are health-based and enforceable.
- c **Secondary drinking water regulations** are based on the aesthetic quality of the water and are non-enforceable guidelines.

Remember that states have the option to set drinking water standards that are more stringent than those set by EPA. Contact your state regulatory agency to determine if any additional state requirements apply to your water system.

5.4.1 National Primary Drinking Water Regulations

Maximum Contaminant Levels and Treatment Techniques

EPA has established national primary drinking water regulations (NPDWRs). As part of the NPDWRs, EPA has developed **maximum contaminant levels (MCLs)** and/or **treatment**

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techniques (TTs) for **more than 80** contaminants, including organics, inorganics, radionuclides, and microbiologicals.

MCLS are drinking water standards that are based on maximum contaminant level goals (MCLGs) and other factors. MCLs are in effect for 72 contaminants. An MCL defines the amount of that contaminant allowed to be present in the drinking water. MCLs are set based on known or anticipated human health effects, and the ability of various technologies to remove the contaminants, their effectiveness, and cost of treatment. MCLs are **enforceable** standards, and therefore, are the levels against which the water samples from regulated systems are judged for compliance with the regulations. To comply with MCLs, your facility may use any state-approved treatment.

When it is not economically or technologically feasible to set an MCL for a contaminant (e.g., when the contaminant cannot be measured easily), EPA may require use of a particular **treatment technique (TT)** instead. A TT is an **enforceable** procedure or level of technological performance that PWSs must follow to ensure control of a contaminant. TTs are set for nine contaminants. The technique specifies the design for part of the drinking water treatment process (such as filtration or corrosion control) to remove these contaminants and prevent health problems. Examples of two TT rules include the following:

- **Lead and Copper Rule.** The Lead and Copper Rule (40 CFR 141, Subpart I) is a set of treatment technique requirements. If you operate a community system or non-transient, non-community water system, you must comply with these requirements. The rule requires all systems which do not meet the specified lead and copper action levels at the tap to optimize corrosion control treatment in an effort to minimize the levels of these contaminants. The rule has five major components: (1) monitoring, (2) distribution system corrosion control, (3) source water treatment, (4) public education, and (5) lead service line replacement. Each of these components can be considerably complex and you should work closely with your primacy state to determine the exact requirements that apply to your system.
- **Surface Water Treatment Rule (SWTR).** The SWTR (40 CFR 141, Subpart H), promulgated in 1989, applies to all PWSs using surfacewater sources or ground water sources under the direct influence of surface water. It includes treatment technique requirements for filtered and unfiltered systems that are intended to protect against the adverse health effects of exposure to *Giardia lamblia*, *Legionella*, as well as many other pathogenic organisms. To comply with the monitoring provisions of SWTR, PWSs must conduct analyses of total coliforms, fecal coliforms, heterotrophic bacteria, turbidity, and temperature, as well as measure residual disinfectant concentrations.

Contact EPA's Safe Drinking Water Hotline at 1-800-426-4791 or see EPA's website at http://www.epa.gov/ogwd000/methods/swtr_tbl.html for more information.

Monitoring and Reporting

As a supplier of water, you must collect samples from your water system, submit them to an EPA or state-approved laboratory (sometimes known as a

Some states perform the sampling for the regulated systems in their state. You must contact your state (or other primacy agency) to find out if this applies to your system.

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certified laboratory) for analysis, and send the analytical results to the regulatory agency (usually state or county health department). New PWSs may have to perform initial monitoring more frequently. The type of analysis performed, the sampling frequency, and the location of the sampling point vary from system to system and chemical to chemical. Sampling requirements for all systems can be found in 40 CFR 141.21, 141.22-24, 141.26, 141.35-42, 141.60, 141.74, 141.80, 141.83, and 141.86-88.

Monitoring reports are required to be sent to the regulatory agency (usually state or county health department). These reports must include:

Note: Waivers may be available from the state to reduce monitoring requirements for some contaminants.

- C Date, place, and time of sampling and name of the person who collected the sample(s)
- C Identification of the sample (e.g., routine or check sample, raw or treated water)
- C Date of analysis, laboratory conducting analysis, name of person responsible for analysis, and analytical method used
- C Analytical results.

Reporting requirements are found in 40 CFR 141.31-33, 141.35, 141.75, 141.90 and 143.5. If a problem is detected through sampling, there are immediate retesting requirements that go into effect and strict instructions for reporting about the problem.

Public Notification and Violations

In addition to reporting to the primacy agency, you must notify the public if there is a violation. The timeframes and methods of public notification differ depending on the kind of violation(s) (e.g., those with acute health risk, non-acute health risk, or other kinds) (40 CFR 141.32). Methods of public notification could include one or more of the following:

EPA is revising public notification regulations and is scheduled to propose them in the Fall 1998.

direct mail; local newspaper; local radio and/or television; hand delivery; or continuous posting in conspicuous places. **Note: In the event of a violation, you must keep monitoring as required by the rules.**

Violations are divided into two categories: Tier 1 and Tier 2, depending on the seriousness of the violation.

Tier 1 violations. Violations of a drinking water standard require prompt notification. (Times vary from “as soon as possible” for acute health hazards to within 45 days for chronic hazards, and are also based on communication mechanisms available to the supplier of drinking water.)

Tier 2 violations. Violations related to monitoring, reporting, or recordkeeping must be reported within three months. In addition to notification when there is a violation, **a special one-time notification is required concerning the contaminant lead.** The lead

notification should have been made by June 19, 1988. If you have not made the notification yet, contact your primacy agency for assistance.

Recordkeeping

If regulated, your food processing facility must maintain certain records for required periods of time. These records and time periods are specified in 40 CFR 141.33, 141.75, 141.80 and 141.91. Depending on the types of records, required time periods range from three (3) to ten (10) years.

5.4.2 National Secondary Drinking Water Regulations

National secondary drinking water regulations (NSDWRs) are federal guidelines regarding taste, odor, color, and certain other non-aesthetic effects of drinking water. As part of the NSDWRs, EPA developed secondary MCLs for 15 contaminants. Additional guidelines under the NSDWRs include those for monitoring, analytical methods, and public notification.

These regulations are **not** federally enforceable. EPA recommends them to states as reasonable goals, but federal law does not require public water systems to comply with them. States may however, adopt their own **enforceable** regulations governing these concerns. To be safe, check your state's drinking water regulations and contact your primacy agency.

5.5 Underground Injection Control (UIC) Requirements

The SDWA UIC program (40 CFR 144-48) is a permit program designed to protect underground sources of drinking water by regulating the injection of **liquid waste** into five classes (I through V) of injection wells. EPA may delegate enforcement of UIC requirements to primacy states. However, EPA maintains primacy enforcement authority for all wells in 13 states and territories, all Tribal Lands, and for some classes of wells in 7 states.

Note: Even if a state/territory/Tribal government does not have primacy for the UIC program, they may have additional requirements and should be contacted. In addition, there also may also be local requirements (e.g., county health department, building code requirements, etc.).

Your facility is subject to these regulations only if it injects liquid waste underground, and only under the following conditions:

- C **Either** your facility maintains a well (or hole) that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids;

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- C **Or** your facility disposes of non-domestic waste/wastewater (such as laboratory waste, industrial waste, storm water) into a subsurface disposal system such as a septic system, drainage well, drywell, or cesspool;
- C **Or** your septic system or cesspool is used solely for the disposal of sanitary waste and has the capacity to serve more than 20 persons per day.

If your facility meets any one of these criteria, you are required to obtain UIC authorization by permit or by rule from your primacy agency to inject liquid waste. UIC permits include design, operating, inspection, closure, and monitoring requirements. Furthermore, wells used to inject hazardous wastes also must comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restriction (LDR) standards. See Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for more information on LDR standards.

If your facility disposes of liquid waste by injection, it is most likely to a Class V well. These wells are currently authorized by rule, which means they do **not** require a permit if they do not endanger underground sources of drinking water (USDWs) and meet certain minimum requirements. Under the conditions of the UIC regulation, you are required to submit to the primacy agency basic inventory information about the Class V injection well, and ensure that the well is constructed, operated, and closed in a manner which protects USDWs. The primacy agency may request additional information or require a permit in order to ensure groundwater quality is adequately protected. Furthermore, many primacy state programs have additional prohibitions or permitting requirements for certain types of Class V injection wells.

Class V wells include shallow nonhazardous industrial waste injection wells, septic systems, and storm water drainage wells.

If any amount of hazardous waste is discharged to a Class V well, you must immediately notify the your primacy agency.

On July 29, 1998, EPA **proposed a rule**, 40 CFR Part 144, Subpart G - *Requirements for Owners and Operators of Class V Injection Wells* (63 FR 40586), which focuses on high-risk Class V injection wells in source water protection areas (SWPAs) that are known to pose the greatest threat to USDWs. These high-risk wells include motor vehicle waste disposal wells, industrial waste disposal wells, and large-capacity cesspools. The proposed regulation would affect the owners and operators of these wells in SWPAs delineated for community water systems and non-transient, non-community water systems that rely on at least one groundwater source. For more information, contact EPA's Safe Drinking Water Hotline at 1-800-426-4791.

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6. HOW DO I COMPLY WITH AIR REGULATIONS?

6.1 Introduction

This section presents an overview of the Clean Air Act (CAA) and a discussion of the common air emissions from food processing facilities. Although total air emissions by the food processing industry typically are less than other manufacturing industries, some sources may emit sufficient air pollution to be regulated under CAA. This section identifies some common types of air emissions produced by food processing facilities; the federal standards that apply to those emissions; how to calculate your facility's total emissions; how to determine whether your facility meets federal thresholds for regulations; and discusses when you need an air permit.

6.2 What is the Clean Air Act?

The federal CAA and the Clean Air Act Amendments (CAAA) of 1990 regulate air pollution in the United States. The CAA authorizes EPA to codify rules and regulations that will ensure that the public and the environment will be protected. Although the CAA is a federal law, state and local air pollution control agencies do much of the work in carrying out the act. It is important for you to know all of the applicable federal, state, and local regulations, because in many instances, state and local regulations may be more stringent than the federal regulations and/or include additional requirements.

The CAA and the CAAA of 1990 can be characterized in terms of three programs: (1) air quality regulations; (2) new source performance standards; and (3) specific pollution problems (e.g., hazardous air pollutant emissions).

Air Quality Regulations

Pursuant to Title I of the Clean Air Act, EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: ozone, sulfur oxides (SO_x), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM), and lead (Pb) (see 40 CFR 50).

How NAAQS for Criteria Pollutants May Affect Food Processing Industries
SO₂, NO_x, and PM result from the combustion of fossil fuels (e.g., industrial boilers, see Section 6.5.1 Boilers or Steam Generating Units). Some significant sources of **particulate emissions** result mainly from solids handling, solid size reduction, cleaning, roasting, drying, and cooking (e.g., PM₁₀ results from flour, sugar, and other dry ingredients). Some of the particulates are dusts, but others are produced by the condensation of vapors ranging in the low-micrometer or submicrometer particle-size. **VOC** emissions may result from fryers (e.g., doughnuts, french fries), direct use of ethanol, by-products of yeast fermentation (ethanol), and from lubricating oils for machinery.

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Because EPA cannot directly regulate ozone, volatile organic compounds (VOCs) and nitrogen oxides (NO_x), which significantly contribute to the formation of ground level ozone, are regulated by EPA. Sulfur oxides are measured in the ambient air as sulfur dioxide (SO₂).

EPA has developed two types of standards for these criteria pollutants: the **primary standard** protects health, whereas the **secondary standard** is intended to protect environmental and property damage. A geographic area that **meets or does better** than the primary standard is called an **attainment area**; areas that **do not meet** the primary standard are called **nonattainment areas**. Many urban areas are classified as nonattainment for at least one criteria air pollutant. Nonattainment areas are designated further as marginal, moderate, serious, severe, or extreme, depending on the amount of effort needed in the nonattainment area to achieve NAAQS. Failure of a state to meet attainment deadlines results in reclassification of a nonattainment area to the next higher classification with more stringent control requirements.

New Air Quality Standards for Ozone and Particulates. In July 1997, EPA promulgated new standards (i.e., NAAQSs) for ozone and particulate matter. As a result of the new standards, additional areas of the country may be designated as nonattainment for ozone and particulate matter. Check with your state and local air pollution control authorities to find out if these new standards affect your facility. For a list of sources and maps of nonattainment areas, refer to the EPA's AIRSWeb site at <http://www.epa.gov/airprog/airs/web/maps.html>.

State Implementation Plans. Under Title I of the CAA, all states must prepare a **state implementation plan (SIP)** for achieving attainment by a specified date (see CAA Section 110, 42 U.S.C. 7410). While EPA promulgates rules and regulations that limit emissions from specific types of facilities and for specific air pollutants, each state must promulgate appropriate rules and regulations through the SIP process, depending on the state's attainment status. EPA must approve each SIP, and if the SIP is not acceptable, EPA can take over enforcing the CAA (e.g., permitting authority) in that state (see CAA Section 110(a)(2), 42 U.S.C. 7410).

*Under Section 110 of the CAA, states are required to implement **new source review (NSR)** provisions for nonattainment areas in their SIPs. Your facility is subject to new source review requirements if you are a new major source or an existing major source with significant modifications to equipment at your facility.*

*A parallel program that applies to attainment areas is the **Prevention of Significant Deterioration (PSD)** which pertains to certain types of stationary sources that have the potential to emit more than 100 tons per year of any regulated pollutant or any source that emits more than 250 tons per year of any one pollutant. For more information on these two programs, see Section 6.3.3 Air Pollution Permits.*

Existing sources located in nonattainment areas may be required to install **reasonably available control technology (RACT)**. RACT is defined as "devices, systems, process modifications, or other apparatus or techniques that are reasonably available" in order to obtain attainment status (CAA Section 172). EPA has established RACT guidelines for over 30 major source categories of nonattainment pollutants and has guidelines under development for additional categories. These guidelines are implemented by the states through their SIPs. Although EPA has not prepared RACT guidelines for food processes, such as vinegar generation, a state may develop RACT guidelines or require major sources to prepare their own RACT requirements. Therefore, RACT guidelines may vary greatly from state to state: contact your state permitting authority to find out what RACT guidelines apply to you.

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Under the CAAA, existing sources must install RACT for VOCs and NO_x. In addition, states with ozone nonattainment areas must revise their SIPs to address various new requirements, including incremental reductions of VOCs.

New Source Performance Standards (NSPS)

Section 111 of the CAA required EPA to identify categories of new and modified sources that contribute significantly to air pollution and endanger public health or welfare. After identifying approximately 60 source categories (e.g., grain elevators, fossil fuel-fired generators, steam generating units) that are designated by size as well as type of process, EPA established uniform, national emission standards known as **New Source Performance Standards (NSPS)** in 40 CFR 60. See Section 6.5.1 *Boilers or Steam Generating Units* for more information about requirements for fossil fuel-fired generators and steam generators.

These emission standards for categories of major new, modified, or reconstructed sources are based on the **best available control technology (BACT)**. EPA is required to consider economic, energy, and non-air environmental factors in setting NSPS. Note that the NSPS program sets a minimum level of control for new and modified sources of air pollution. More stringent control may be required under either the **prevention of significant deterioration (PSD)** or the nonattainment pre-construction permitting programs. See Section 6.3.3 *Air Pollution Permits* for more information.

Monitoring, notification, and recordkeeping requirements. Owners and operators of sources subject to NSPS must meet notification and recordkeeping requirements listed at 40 CFR 60.7. They must also meet all monitoring requirements as presented in 40 CFR 60.13, or the applicable subpart.

Specific Pollution Problems

In addition to NAAQS and NSPS, the CAA requires EPA to address specific pollutants, known as hazardous air pollutants (HAPs). HAPs, or air toxics, are chemicals that cause serious health and environmental harm. HAPs are released from stationary sources throughout the country and from motor vehicles.

Under Title III of the CAA, EPA established **National Emission Standards for Hazardous Air Pollutants (NESHAP)**. The list of regulated HAPs can be found in Section 112(b)(1) of the CAA. The CAAA further directed EPA to develop a list of sources that emit any of the HAPS and to develop regulations for these categories of sources. To date, EPA has listed 188 hazardous substances and 174 source categories and has developed a schedule for the establishment of emission standards for these sources. EPA is developing these emission standards for both new and existing sources based on **maximum achievable control technology (MACT)**. MACT is defined as the control technology that achieves the maximum degree of HAP emission reductions, taking cost and other factors into account (see CAA 112(b)).

*EPA is developing a few **MACT** standards for the food processing industry, such as controls to reduce acetaldehyde, which is produced as a by-product during the fermentation process in the baker's yeast manufacturing industry.*

Monitoring, notification, recordkeeping, and reporting requirements. Notification requirements for NESHAP source categories are listed in 40 CFR 63.9. (Note: EPA is planning to revise the notification requirements.) Monitoring requirements for NESHAP source categories are presented in 40 CFR 63.8 and recordkeeping and reporting requirements are listed in 40 CFR 63.10.

The state in which your food processing facility operates also may regulate HAPs. Check with your state and local air pollution control authorities to find out if additional or more stringent standards for HAPs apply to you.

6.3 What Are My Air Emissions and How Do I Manage Them?

Because your facility emits air pollutants, it is important that you comply with air pollution control requirements and find methods for reducing air emissions from your facility in order to protect yourself, your co-workers, and the quality of air in your community. There are several steps you should follow to responsibly manage air emissions from your food processing facility, including:

- U Identify the products or processes you use that produce air pollutants
- U Calculate all **actual** and **potential** air emissions that your facility emits (This is important for determining whether you are a major or minor source and what federal, state, and local requirements apply to your facility. See Section 6.3.2 *Determining Whether Your Facility Meets Federal Regulations* for more information.)
- U Check with your state and local air pollution control offices and determine which requirements apply to your facility
- U Comply with all applicable regulations, including obtaining the necessary permits. (See Section 6.3.3 *Air Pollution Permits* for more information.)

6.3.1 Identifying and Quantifying Air Emissions

Your food processing facility may be emitting air pollutants (i.e., criteria, HAPs) from both process and ancillary operations, such as refrigeration and steam generation. You should evaluate the processes and ancillary operations at your facility in order to determine the type and amount of pollutants released into the air.

After identifying your facility's air pollutant emissions that are subject to regulation under CAA and state requirements, you are required by the CAA to determine the **actual** amount of air pollutants generated, as well as your facility's **potential to emit** these pollutants. You may need to perform specific calculations to determine your facility's

*Under Section 112 of the CAA, your facility is required for all regulated pollutants to calculate **actual emissions**, as well as your **potential to emit** these pollutants.*

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actual and potential air emissions to determine which threshold for regulation your facility meets. See Section 6.3.2 *Determining Whether Your Facility Meets Federal Regulations* for more information.

You can calculate your facility's actual emissions and potential to emit by one of two ways: (1) pollutant by pollutant; or (2) total of all emissions. Calculating emissions for NO_x, SO₂, PM generally are done on a pollutant-by-pollutant basis, while total emission calculations for VOCs and HAPs may be done by calculating total pollutant emissions or pollutant-by-pollutant. In order to calculate emissions (actual or potential), you must first determine the following:

- C The source (e.g., boiler, reactor, etc);
- C What the source does to cause an emission (e.g., burn fuel, react);
- C Raw materials or inputs used, and at what rates;
- C The calculation method (e.g., *AP-42 Compilation of Air Pollutant Emission Factors*, stack test, material balance).

Determining Your Facility's Actual Emissions: Actual emissions can be determined by the following methods: (1) estimates calculated using published emission factors; (2) stack tests; (3) engineering estimates; or (4) material balance methods. In general, facilities may choose which method to use when calculating actual emissions; however, the method chosen is subject to review and approval by the state.

- C Emission estimates can be calculated using **published emission factors**. Published emission factors are representative values that attempt to relate the quantity of a pollutant released into the atmosphere with the activity associated with its release. These factors usually are expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., pounds of particulate emitted per 1000 gallons of fuel oil burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors simply are averages of all available data of acceptable quality, and generally are assumed to be representative of long-term averages for all facilities in the source category.

To estimate emissions using published emission factors, use the following general equation:

$$E = A \times EF \times (1 - ER/100)$$

where E = emissions; A = activity rate (e.g., gallons (in thousands) of fuel oil burned per year) EF = emission factor (e.g., pounds of particulate per 1000 gallons of fuel oil burned); and ER = overall emission reduction efficiency (%).

This general equation for estimating emissions and many emission factors are published in EPA's AP-42 document series entitled, *Compilation of Air Pollutant Emission Factors*. AP-42 emission estimates and factors generally are calculated on a pollutant-by-pollutant basis. The extent of completeness and detail of the emissions information in AP-42 depends upon the availability of published references. Emissions from some processes are better documented than others. AP-42 can be found at EPA's Technology Transfer Network (TTN) website at <http://www.epa.gov/ttn/chief/ap42.html>.

- C **Stack tests** can be done to measure short term (e.g., hourly) actual emissions at a maximum production rate. EPA prescribes test methods to measure pollutant emissions, and these are listed in 40 CFR 60, Appendix A. It is likely that your facility is required to do stack testing in order to show compliance with NSPS and NESHAP standards as discussed earlier in this section. Many facilities voluntarily do stack testing if an emission estimate (see below) is not available, or if it is believed that an emission estimate is overestimating your emissions. For example, if AP-42 determines that you are a **major source**, you may want to use stack tests in order to show that your emissions are actually lower than the major source category. By demonstrating that your emissions are too low to be declared a major source, your facility may save time and money spent on permitting fees, pollution control equipment, and other regulatory requirements. See Section 6.3.3 *Air Pollution Permits* for more information.
- C **Engineering estimates** use equipment-specific calculations to determine actual emissions, such as mass transfer calculations, heat transfer calculations, and distillation calculations, among others. This type of emission estimation procedure requires an intimate knowledge of the specific process that generates the emission; the thermodynamic, physical, and chemical properties of the materials involved; and experience in the application of the appropriate calculation equations. The desired results from engineering estimates normally are air pollutant rates per unit time (e.g., lb/hr) emitted from the process or piece of equipment. When using engineering estimates, you can calculate total pollutant emissions or pollutant-by-pollutant.
- C When emission factors are not available and engineering estimates are not practical, the **material balance method** may be used for

Compilation of Air Pollutant Emission Factors (AP-42)

*Dryers, roasters, ovens, and other equipment used by the food processing industries burn natural gas. Emissions from the combustion of natural gas include nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and VOCs, as well as some sulfur dioxide (SO₂) and particulate matter. **AP42 Natural Gas Combustion** is a good reference for calculating these emissions.*

*Fryers (doughnuts, french fries, corn chips) emit particulate matter and small amounts of VOC from the deep fat frying process. See **AP42 Snack Chip Deep Fat Frying** for calculating these emissions.*

Ethanol is often used to shine jellybeans. To use **material balance method**, subtract the amount of ethanol emitted as VOCs from the amount of ethanol applied initially.

determining your emission rates. The basic concept underlying the material balance method is that the amount of material entering a process (like cooling or preserving) is equal to the amount exiting the process. Therefore, what you purchase as raw material must become part of the finished product, be emitted to the air, released into water, be disposed of as waste, or be accumulated in the inventory. When using the material balance method, you can calculate pollutants by either calculating total emissions, or by calculating pollutant-by-pollutant. This method may be preferable for some businesses that find the options discussed above to be too costly or otherwise impractical.

Determining Your Facility's Potential to Emit. A facility's **potential to emit** is defined as the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable (40 CFR 52.21).

To determine your facility's potential emissions, you can use the following calculation:

Potential emissions (lbs/year) = Lesser value of uncontrolled or allowable emission rate at maximum capacity x 8760 hours

Please keep in mind that your **potential to emit** must account for emissions that **could have** come from any unused equipment, even if these emissions were not included when determining the facility's actual emissions. For example, if your facility has a boiler that operates 24 hours a day for only 300 days a year, you still must calculate your **potential to emit** on the assumption that your boiler operates all 365 days a year.

6.3.2 Determining Whether Your Facility Meets Federal Regulations

A facility's potential to emit pollutants is important in determining how your facility is regulated under CAA, and whether you must obtain a CAA Title V operating permit. Whether and how you are regulated depends on several factors including whether your facility is located in a non-attainment area for a particular criteria pollutant and whether your facility's potential to emit meets the threshold for regulation as a major source. Together these will determine whether you must obtain a Title V permit.

Under the CAA, facilities are classified as major or minor sources based on potential to emit. Generally, a facility is considered a **major source** if its potential to emit is 100 tons per year (tpy) of any criteria pollutant. For facilities in nonattainment areas, the emission rate threshold for major sources varies by pollutant and area classification (e.g., moderate, serious, severe). The following table summarizes these thresholds. Note: The threshold values decrease as the degree of non-attainment increases from marginal or moderate to serious to severe, etc.

Note: a facility can be a major source for more than one pollutant.

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A facility is also a **major source** if it has the potential to emit 10 or more tpy of any single HAP, or 25 tpy or more of any combination of HAP emissions.

Based on the above discussion, if your facility meets any of the thresholds shown in Table 6-1, your facility is classified as a **major source**, and you must follow the requirements listed below:

- U** Obtain a Title V operating permit (see Section 6.3.3 *Air Pollution Permits*).
- U** If you are a major source in a nonattainment area, you must reduce your emissions through the use of Reasonably Available Control Technology (RACT) (see Section 6.2 *What is the Clean Air Act?*).
- U** If you emit HAPs, such as VOCs, check with your state environmental agency because it may regulate other pollutants in addition to those on the federal HAPs list.

Table 6-1. Major Source Emission Rate Thresholds in Nonattainment Areas

Pollutant	Area Classification ¹	Threshold ²
Ozone	Marginal or Moderate	100 tpy VOCs or NOx
	Serious	50 tpy VOCs or NOx
	Severe	25 tpy VOCs or NOx
	Extreme	10 tpy VOCs or NOx
	Transport regions not classified as severe or extreme	50 tpy VOCs
Carbon monoxide	Moderate	100 tpy CO
	Serious	50 tpy CO
PM-10	Moderate	100 tpy PM-10
	Serious	70 tpy PM-10

¹ EPA has authority to classify SO_x, NO₂, and lead nonattainment areas by seriousness of the nonattainment problem, in order to apply attainment dates and other relevant criteria (CAA Section 172(a)(1)(A)). Currently, EPA has no plans to establish a classification scheme for SO₂ nonattainment areas (56 FR 13545).

² In ozone nonattainment areas, the major source threshold applies to VOC or NO_x emissions, but not a sum of those emissions. For example, a source in a severe nonattainment area that emits 20 tpy of VOCs and 20 tpy of NO_x is not considered a major source.

Source: *Clean Air Handbook 3rd Edition*. Government Institutes, Inc. 1998.

6.3.3 Air Pollution Permits

Permits can take several forms. These include the two discussed below - an **operating permit (Title V)** and a **preconstruction permit**, also known as a new source permit.

Permit Type: Title V Operating Permit

An operating permit (Title V) will contain all applicable and enforceable control requirements and, like all permits, will have a defined period of effectiveness. An operating permit serves three purposes:

- (1) Provides an inventory of air pollution emission units at sources. This inventory is used by federal, state, and local agencies to plan for either further reductions of air pollution or the maintenance of current air quality.
- (2) Indicates the control requirements to be used to reduce the emissions of pollutants at a facility.
- (3) Identifies how a facility demonstrates compliance.

The Title V operating permit specifies all of the applicable state and federal requirements, including emission limits; and recordkeeping, monitoring, and reporting requirements with which your facility must comply. It also has a defined period of effectiveness. You must obtain a Title V operating permit if you are a:

Monitoring, recordkeeping, and reporting requirements for operating permits can be found at 40 CFR 70.6.

- Major source with the potential to emit 100 or more tpy of any air pollutant in attainment areas (as discussed in Section 6.3.2 *Determining Whether Your Facility Meets Federal Regulations*).
- Major source with the potential to emit ten or more tpy of any one HAP, or 25 tpy of any combination of HAPs in attainment areas (as discussed in Section 6.3.2 *Determining Whether Your Facility Meets Federal Regulations*). Note: a non-major source of HAPs may be still be required to obtain a permit under NESHAP, see below.
- Major source subject to nonattainment provisions where lower thresholds apply depending on an area's severity classification for ozone, carbon monoxide or particulate matter.
- Facility subject to NSPS (40 CFR 60) or NESHAP (40 CFR 61 & 63).
- Facility required to have a pre-construction permit in a nonattainment area or prevention of significant deterioration area.

Although operating permits are issued by the states, EPA is authorized to review and approve the state's permit program, as well as to review and approve each individual permit issued by the state.

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Minor sources. Generally, there are two types of minor sources: **natural minor sources** and **synthetic minor sources**.

- **Natural minor sources** are facilities whose potential to emit are below applicable thresholds without any restrictions on operations or enforceable control technology. If your facility is a natural minor source, you are not subject to **major source** federal requirements. However, the state may require you to obtain a federally enforceable state operating permit (FESOP) (54 FR 27274). These state permits may require certain requirements, such as restrictions on production, hours of operation, and recordkeeping and reporting provisions.
- **Synthetic minor sources** are considered to be minor sources after installing restrictions on operations or enforceable control technology. A facility may declare itself to be a synthetic minor source if its potential to emit is less than the applicable thresholds and the permitting authority approves this declaration. With this approval, the facility accepts emissions limits, or installs control technology to achieve emissions reductions that allow the permitting authority to consider the facility a minor source.

Note: There are pollutants that are subject to EPA and/or state regulations regardless of a source's size. For example, solvent degreasers (used to clean machinery), are commonly subject to regulations regardless of a source's size.

Compliance Assurance Monitoring. EPA issued its final Compliance Assurance Monitoring (CAM) rule in October 1997 (40 CFR 64) in order to satisfy the requirements for monitoring and compliance certification under the Title V Operating Permits program (40 CFR 70) and the CAAA of 1990. The purpose of CAM is to help owners and operators of facilities to conduct effective monitoring of air pollution control equipment. Under CAM, you must monitor the operation and maintenance of your control equipment in order to evaluate the performance of control devices and report whether or not your facility meets established emission standards. If you find that your control equipment is not working properly, the CAM rule requires you to take action to correct any malfunctions and to report such instances to the appropriate enforcement agency. For more information on CAM, refer to EPA's website at <http://www.epa.gov/ttnuatw1/cam/>.

Permit Type: Pre-construction Permit (also known as a New Source Permit)

A **pre-construction permit** is required before a new major emissions unit(s) can be built in a nonattainment area. A pre-construction permit is often called a **construction permit** or a **permit to install (PTI)**. Section 110 of the CAA regulates construction of major new sources or major modifications of existing sources in **nonattainment** areas through its **New Source Review (NSR) Program**. Your facility is

Note: New source review provisions (CAA Section 110), which are required for state implementation plans, are administered independently from new source performance standards (NSPS), which authorize EPA to identify categories of new and modified sources that contribute significantly to air pollution that endangers human health or welfare (CAA Section 111).

subject to NSR permitting requirements if you are either a new major source or an existing major source with significant modifications to equipment (e.g., for process operations) at your facility. States are required to implement NSR provisions in their SIPs (40 CFR 51). **Each state's regulations define when a facility is considered a new source.**

Under this program, major new sources or major modifications of existing sources in nonattainment areas must install control technology that will achieve a standard defined as the **Lowest Achievable Emission Rate (LAER)**. NSR also requires major new or modified sources in nonattainment areas to **offset** their emissions. You can offset new emissions by buying or trading emissions reductions from other sources. Most minor new source review programs do not require offsets, but many require the source to implement the **Best Available Control Technology (BACT)**.

Minor New Source Review. If you are a new source whose emissions are less than the threshold(s) for classification as a major, you may still be subject to minor new source review depending on your state. Because you may be more likely to modify your existing facility rather than build a new one, you should understand the regulatory implications of modifying your plant. **Each state has a federally approved program to regulate minor modifications and minor new sources.**

Prevention of Significant Deterioration. The Prevention of Significant Deterioration (PSD) program applies to facilities in **attainment** areas. Under the PSD program, certain types of stationary sources with the potential to emit more than 100 tons per year of any regulated pollutant or any source that emits more than 250 tons per year of any one pollutant may be required to obtain a PSD permit. The permit must be obtained before construction of a **major** new source or a **major modification of an existing source** takes place. In order to obtain the PSD permit, the owner or operator of the facility must demonstrate that the proposed source will (1) comply with NAAQS and PSD **increments** (listed at 40 CFR 50.21); (2) employ best available control technology for regulated pollutants emitted in significant amounts, and (3) have no adverse impact on other air quality related values. **Note: PSD permitting requirements generally do not affect many food processing facilities; however, check with your state permitting authority.**

In order to obtain a PSD permit, your facility must demonstrate that it will employ Best Available Control Technology (BACT). BACT is defined as the maximum degree of emission reduction achievable and takes into account economic, energy, and environmental factors.

6.4 Risk Management Planning

As required under Section 112(r) of the amended CAA, EPA has promulgated the Risk Management Program Rule. The rule's main goals are to prevent accidental releases of regulated substances and to reduce the severity of those releases that do occur by requiring facilities to develop risk management programs. A facility's risk management program must incorporate three elements: a hazard assessment, a prevention program, and an emergency response program. These programs are to be summarized in a risk management plan (RMP)

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that will be made available to state and local government agencies and the public. Besides helping facilities prevent accidents, the rule can improve the efficiency of work operations by ensuring that workers are trained in proper procedures and by using preventive maintenance to reduce equipment breakdowns.

Who's Covered. If you have more than a threshold quantity of any of the **regulated substances** in a single process, you are required to comply with the regulation (40 CFR 68). In terms of this regulation, process means "manufacturing, storing, distributing, handling, or using" a regulated substance in any other way. Ammonia, chlorine, and propane are some of the regulated substances commonly used by food processing facilities. **Covered facilities must comply with the rule by June 21, 1999.**

EPA has currently established a list of 140 regulated substances covered by these CAA regulations. These substances were published in the Federal Register on January 31, 1994; EPA amended the list by rule, published on December 18, 1997. EPA may amend the list in the future as needed.

Three levels of compliance.

The risk management planning regulation (40 CFR Part 68) defines the activities facilities must undertake to address the risks posed by regulated substances in covered processes. To ensure that individual processes are subject to appropriate requirements that match their size and the risks they may pose, EPA has classified them into 3 categories ("programs"):

*A risk management program is similar to OSHA's **Process Safety Management (PSM)** program for highly hazardous chemicals (29 CFR 1910.119) that became effective in May 1992. The difference between the programs is the focus. The OSHA regulation is concerned with worker safety, while EPA's CAA regulation is concerned with the safety of the environment and community. For more information about inventory and reporting requirements for OSHA hazardous chemicals, see Section 7.4 Hazard Chemical Inventory and Reporting.*

- **Program 1** requirements apply to processes for which a worst-case release, as evaluated in the hazard assessment, would not affect the public. These are processes that have **not** had an accidental release that caused serious offsite consequences.
- **Program 2** requirements apply to less complex operations that do **not** involve chemical processing.
- **Program 3** requirements apply to higher risk, complex chemical processing operations and to processes already subject to the **OSHA Process Safety Management Standard (29 CFR 1910.119)**.

Risk Management Planning. If your facility has more than a threshold quantity of any of the 140 regulated substances in a single process, you are required to develop a risk management program and to summarize your program in a risk management plan by June 21, 1999. If you are a facility with processes in Program 1, you must carry out the following elements of risk management planning:

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- C An offsite consequence analysis that evaluates specific potential release scenarios, including worst-case and alternative scenarios.
- C A five-year history of certain accidental releases of regulated substances from covered processes.
- C A risk management plan (RMP), revised at least once every five years, that summarizes and documents these activities for all covered processes.

Facilities with processes in Programs 2 and 3 must also address each of the following elements:

- C An integrated prevention program to manage risk. The prevention program will include identification of hazards, written operating procedures, training, maintenance, and accident investigation.
- C An emergency response program.
- C An overall management system to supervise the implementation of these program elements.

Risk Management Plan. If you do not already have a risk management plan, you should develop one as soon as possible. Your plan may include some or all of the following elements:

- Documentation of process safety information
- Process hazard analysis information
- Documentation of operating procedures
- Training program information
- Pre-startup review information
- Maintenance program information
- Management of Change program information
- Accident history
- Emergency response program information
- Worst-case and alternative release scenarios
- C Other elements

The plan you submit to EPA will summarize your program and will have to be made available to the public. (Note: EPA's deadline for determining whether facilities must submit their RMPs to EPA Headquarters or to the regional offices is June 21, 1999.) Once your plan is submitted, it will be reviewed for accuracy and completeness. A site visit also may be conducted at your facility by either EPA, state, or local officials to determine whether your plan accurately reflects your risk management program in operation.

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Industry-specific guidance. To make compliance easier for small businesses, EPA has worked with trade associations and other industry groups to develop a series of industry-specific brochures that will assist businesses in creating their risk management programs. Of these, the brochures that may be applicable to the food processing industry include those for water treatment facilities (i.e., publicly owned treatment works), propane users, and operators of ammonia refrigeration systems. These brochures can be accessed at EPA's Chemical Accident Prevention and Risk Management Planning website at <http://www.epa.gov/ceppo/>.

Excerpt from EPA's RMP Brochure for Operators of Ammonia Refrigeration Systems
Under the Risk Management Program Rule, some operators of ammonia refrigeration systems will have to implement a risk management program and file a risk management plan (RMP) with EPA by June 21, 1999. If you store or use a total of more than 10,000 lbs of ammonia at your facility in one or more interconnected tanks, receiver vessels, or pipelines, you are likely to be subject to this rule. If you operate two refrigeration systems with adjacent equipment, consider the total quantity of ammonia in both systems when determining if this rule applies to you. For more information, access this brochure at <http://www.epa.gov/ceppo/> or see Section 6.5.2 Air Conditioners/Refrigeration Service and Disposal: Ammonia and CFCs.

Model Risk Management Programs. EPA has been working with industry groups to develop model risk management programs. One of these is for ammonia refrigeration systems. To review this model program, refer to EPA's Chemical Accident Prevention and Risk Management Planning website at <http://www.epa.gov/swercepp/acc-pre.htm#Model Plans/>.

Communicating RMP Requirements. The Food Industry Environmental Council (FIEC), a coalition of more than 50 food processors and trade associations, has developed materials to assist food processors in communicating with the public about risk management programs. These communication materials include the following:

- C "Backgrounders" on ammonia, chlorine, and propane;
- C A computer disk with the shell of a tri-fold brochure and filler language;
- C Communication guidelines;
- C A question and answer document; and
- C A resource and reference document.

The communication packages are available from your food trade association.

For more information about risk management planning requirements, visit EPA's Chemical Emergency Preparedness and Prevention Office's webpage at <http://www.epa.gov/ceppo/> or refer to Section 9.2 *Emergency Planning and Reporting Requirements*. You also may obtain copies of the rule and a wide variety of technical assistance materials, as well as answers to your specific questions, from EPA's RCRA/UST, Superfund and EPCRA hotline at 1-800-424-9346 or 703-412-9810.

6.5 Air Compliance Issues for Selected Operations

6.5.1 Boilers or Steam Generating Units

Most food processing facilities have industrial boilers or hot water heaters for generating steam or hot water for processing, cooking, or sanitation. Industrial boilers tend to be smaller in size, subject to more and greater load swings, operated at a lower capacity factor, and capable of utilizing multiple fuels. In addition, they often are the only supplier to their site and must be highly reliable. Coal, fuel oil, and natural gas are the major fossil fuels used by boilers. The combustion of these fossil fuels produces primarily sulfur oxides (SO_x), nitrogen oxides (NO_x) and particulate emissions nationwide, with minor amounts of VOCs and carbon monoxide.

If your facility stores fuel oil onsite, you must comply with the Oil Pollution Act's regulations. For more information, see Section 4.6 The Oil Pollution Act Regulation.

If your facility has any of the following types of boilers, then you must comply with federal emission limits for NO_x, SO₂, and particulates:

- (1) A fossil fuel-fired or fossil fuel and wood residue-fired steam generator which has a heat input rate of more than 250 million Btu and was constructed after August 17, 1971 (40 CFR 60 Subpart D);
- (2) An industrial-commercial-institutional (ICI) steam generator which has a heat input rate of more than 100 million Btu and was constructed, modified, or reconstructed after June 19, 1984 (40 CFR 60 Subpart Db); or
- (3) A small ICI generator which has a heat input capacity ranging from 10 million Btu to 100 million Btu per hour or less and was constructed, modified, or reconstructed after June 9, 1989 (40 CFR 60 Subpart Dc).

As stated above, NO_x emissions are common type of emissions from boilers and these emissions must meet federal limits. Table 6-2 *Federal Emission Standards for NO_x* summarizes the federal NO_x emission limits for the first two types of boilers listed above. Refer to 40 CFR 60, Subpart Dc for information on the third type of boiler listed above. Similar emission limits for SO₂ and particulates can be found in 40 CFR 60 Subparts D, Db, and Dc.

State Standards. In addition to the federal emission limits for NO_x, SO₂, and PM, state and local governments may have additional or more stringent emission limits. State emission standards for boilers vary depending on the **attainment** status of the geographical region as well as other factors (see Section 6.2 *What is the Clean Air Act?*). For example, while some states such as South Dakota defer to federal regulations when setting emission limits for steam generators, other states implement more stringent regulations. Also states, such as Pennsylvania and Massachusetts, have implemented NO_x emission trading programs that may

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affect different types and sizes of boilers within their states. **Contact your state regulatory agency for more information on state emission limits.**

Activities Related to Emission Limits. EPA is leading or participating in several major activities related to emission limits for NO_x and VOCs, which will affect the regulation of steam generating units. Chief among these are the Ozone Transport Assessment Group (OTAG) and the Industrial Combustion Coordinated Rulemaking (ICCR) that are described below:

- **Ozone Transport Assessment Group (OTAG).** To assist with compliance with NAAQS, OTAG is identifying and recommending to EPA cost-effective control strategies for NO_x and VOCs. OTAG, which is a partnership between EPA, the Environmental Council of the States (ECOS), and various industry and environmental groups, prepared the *Assessment of Control Technologies for Reducing Nitrogen Oxide Emissions From Non-Utility Point Sources and Major Source Areas - Appendix C*. This report provides an overview of NO_x control technologies available for non-utility, fossil-fuel fired boilers and can be reviewed at EPA's website at <http://www.epa.gov/ttnotag1/finalrpt/chp5/appc.htm/>.
- **Industrial Combustion Coordinated Rulemaking (ICCR).** EPA is planning an ICCR for ICI combustion sources (e.g., boilers, process heaters, waste incinerators). EPA will develop recommendations for federal air emission regulations that address the various combustion source categories and pollutants. These regulations will be developed under Sections 111 (NSPS), 112 (NESHAP), and 129 (solid waste combustion) of the CAA. Seven categories of ICI combustion sources are listed for regulatory development as follows:
 - Industrial boilers (Sections 111 and 112);
 - Commercial-institutional boilers (Sections 111 and 112);
 - Process heaters (Sections 111 and 112);
 - Industrial-commercial solid waste incinerators (Sections 111 and 129);
 - Other solid waste incinerators (Sections 111 and 129);
 - Stationary combustion turbines (Sections 111 and 112); and
 - Stationary internal combustion engines (Sections 111 and 112).

The overall goal of the ICCR is to reduce the potential for conflicting or duplicative regulations for the various combustion source categories, rather than regulating each source category individually. This approach will facilitate consistency and produce greater environmental benefits at lower cost. For more information on the status of ICCR, refer to EPA's website at <http://www.epa.gov/ttn/iccr/>.

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Table 6-2. Federal Emission Standards for NO_x (Emission limits for SO₂ and PM can be found in 40 CFR 60, Subparts D, Db, and Dc.)

Fossil-Fuel-Fired Steam Generators with a heat input rate > 250 million Btu per hour constructed or modified after August 17, 1971 (40 CFR 60 Subpart D)	
Fuel Type	Emission Limit
Gaseous fossil fuel	0.20 lb/Mbtu
Liquid fossil fuel ¹	0.30 lb/Mbtu
Solid fossil fuel (mixed with or without wood residue) ¹	0.70 lb/Mbtu
Lignite or lignite and wood residue ¹	0.60 lb/Mbtu
For Industrial-Commercial-Institutional Steam Generating Units with a heat input rate > 100 million Btu per hour constructed, modified, or reconstructed after June 19, 1984 (40 CFR 60 Subpart Db)	
Fuel Type	Emission Limit
Natural Gas and distillate oil	
1) Low heat release rate	0.10 lb/Mbtu
2) High heat release rate	0.20 lb/Mbtu
Residual Oil	
1) Low heat release rate	0.30 lb/Mbtu
2) High heat release rate	0.40 lb/Mbtu
Coal	
1) Mass-feed stoker	0.50 lb/Mbtu
2) Spreader stoker and fluidized bed combustion	0.60 lb/Mbtu
3) Pulverized coal	0.70 lb/Mbtu
4) Lignite (except lignite mined in ND, SD, or MT)	0.60 lb/Mbtu
5) Lignite mined in ND, SD, or MT and combusted in a slag tap furnace	0.80 lb/Mbtu
6) Coal-derived synthetic fuels	0.50 lb/Mbtu
Duct burner in system:	
1) Natural gas and distillate oil	0.20 lb/Mbtu
2) Residual oil	0.40 lb/Mbtu
Mixtures of coal, oil, or natural gas.	Refer to formula defined in 40 CFR 60 Subpart Db; Section 60.44b.
Coal or oil, or a mixture with other fuels.	Refer to formula listed in 40 CFR 60 Subpart Db; Section 60.44b.
Natural gas mixed with wood, municipal-type solid waste, or other solid fuel (except coal).	0.30 lb/Mbtu ²
Coal, oil, or natural gas mixed with by-product/waste.	Refer to formula defined in 40 CFR 60 Subpart Db; Section 40.44b. ³

¹ See 40 CFR 60, Subpart Db Section 60.44 for specific exceptions to these emission limits.

² Does not apply if facility has an annual capacity factor of 10% or less for natural gas and is subject to federally enforceable requirement limiting operations to an annual capacity factor of 10% or less.

³ Does not apply if facility has an annual capacity factor of 10% or less for coal, oil, and natural gas and subject to federally enforceable requirement limiting operations to an annual capacity factor of 10% or less.

6.5.2 Air Conditioners/Refrigeration Service and Disposal: Ammonia and CFCs

Ammonia

Most food processing facilities use closed loop ammonia refrigeration systems for heat exchange. Ammonia is handled as a gas and must be added to refrigeration systems to replace amounts lost through leaks or because of losses when purging a section of the system for maintenance. Because ammonia is not a listed air pollutant or classified as one of the 188 hazardous air pollutants, a Title V operating permit for ammonia emissions is not likely to be required. However, it is possible that ammonia will be subject to state permitting requirements.

Ammonia refrigeration systems are subject to Section 112(r) of the amended CAA, which mandates EPA to publish rules and guidance for chemical accident prevention. Ammonia is a volatile chemical and will be released to air through system filling, relief vents, and leaks in valves and fittings. All ammonia lost through these means should be reported as fugitive emissions in a Toxic Release Inventory (TRI) report (40 CFR 372), if the total is over the threshold amount. See Section 7.5 *Toxic Chemical Release Reporting - Section 313* for more information about TRI reporting.

On January 31, 1994, EPA promulgated a final list of 140 regulated substances and threshold quantities, which are identified under Section 112(r). According to the final list, ammonia is a regulated substance if it is at a **concentration of at least 20 percent** and exceeds the established threshold quantity of 20,000 lbs (40 CFR 68). Therefore, if your facility has a **process** that uses a 20 percent ammonia solution which exceeds the threshold quantity established by EPA, you must develop and implement a risk management plan (RMP) for that process. See Section 6.4 *Risk Management Planning* for more information. For a comparison of these requirements to similar requirements under other EPA statutes, see Section 9.2 *Emergency Planning and Reporting Requirements*.

Chlorofluorocarbons (CFCs)

Your food processing facility may be subject to requirements of the stratospheric ozone protection program if you have motor vehicle air conditioners, certain appliances (air conditioners, refrigerators, and freezers), and industrial process refrigeration units that use CFCs and other class I and class II substances (see box).

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The CAA provides a framework for the regulation of ozone-depleting substances such as CFCs to protect the stratospheric ozone layer. EPA's stratospheric ozone regulation does the following:

- Bans the use of certain ozone-depleting substances in non-essential products;
- Requires labels for products containing or manufactured with regulated ozone-depleting substances;
- Bans the production of many of these substances (see 40 CFR 82).

EPA has established requirements for servicing and disposal of air-conditioning and refrigeration equipment that contains regulated ozone-depleting refrigerants. These requirements described briefly below are intended to minimize the release of such refrigerants to the atmosphere. If you own/operate appliances containing ozone-depleting refrigerants, you must do the following:

- U When opening any appliance containing refrigerants for maintenance, service, repair, or disposal, you must have at least one piece of certified, self-contained recovery equipment available at your facility.
- U Notify EPA that such equipment is available at your facility. This equipment must be operated to certain specified standards that minimize atmospheric release of refrigerants.
- U If your appliances contain 50 or more pounds of refrigerant, you must repair leaks in a timely manner. You must maintain records documenting the date and type of all servicing performed on the appliance, as well as the quantity of refrigerant added.
- U If you are an appliance owner/operator who adds the refrigerant, you must maintain records of refrigerant purchased and added.
- U If you use technicians to service and maintain refrigerant-containing appliances, they must be certified by an approved technician certification program.
- U If you employ such technicians, you must maintain records demonstrating compliance with the certification requirement (see 40 CFR 82).

Ozone-depleting chemicals to be regulated have been divided into two classes based on their ozone depletion potential:

Class I includes specified CFCs, halons, methyl chloroform, carbon tetrachloride, methyl bromide, and HBFCs. Production of these chemicals were phased out in 1996, except for methyl bromide, production of which will be banned in 2001.

The principal substances included in **Class II** are hydrochlorofluorocarbons (HCFCs). Some HCFCs will be phased out either partially (HCFC-22, HCFC-1426) or entirely (HCFC-1416) beginning in 2003. The HCFCs with the most severe ozone-depleting effects will be phased out first. **Note that the phase out is for production and importation, not use.** Thus HCFCs can be used as refrigerants after 2020; however, they may not be available.

In addition to federal regulations, many state and local governments have enacted legislation and ordinances limiting the production and use of ozone-depleting substances. Contact your state permitting authority to find out about all requirements that apply to you. For information about EPA's Stratospheric Ozone Protection Program [including EPA's *Significant New Alternative Policy* (SNAP) program], call the Stratospheric Ozone Hotline at 1-800-296-1996 or visit EPA's website at <http://www.epa.gov/ozone/>.

6.5.3 Building Renovation/Demolition: Asbestos

If you are renovating or demolishing a structure on your property, you have the potential to release asbestos fibers that can create serious worker health and safety problems. Asbestos is an insulation material widely used in the past where fire retardation was required or desirable. Applications for asbestos include, but are not limited to, floor tiles, ceiling tiles, siding, and thermal system insulation. Renovations or demolition activities involving asbestos-containing materials are regulated by the CAA's NESHAPs (see CAA Section 112; 40 CFR 61, Subpart M). Although considered a serious health hazard, asbestos is not regulated as a RCRA hazardous waste.

Asbestos fibers have been linked to serious adverse health effects from the inhalation of airborne asbestos fibers. However, if asbestos is present in your facility, it does not mean that your employees are in danger. As long as the material containing the asbestos remains in good condition and is not disturbed, exposure to asbestos fibers is unlikely. The threat of exposure arises when asbestos-containing materials are disturbed through repair, renovation, demolition, or natural disturbances, and asbestos fibers potentially are released. Government regulations now are requiring that asbestos be phased out of production and use.

The chances for human exposure to asbestos are highest during maintenance work or building demolition.

If you are planning any renovation or demolition activities, you should assume that most old building construction materials contain asbestos. Typical asbestos-containing materials include pipe and duct insulation, fireproofing, roofing materials, floor tile, and transite pipe and sheet goods. Many other building materials, such as ceiling tiles, wall board, plasters, and fire doors, may also contain asbestos.

If you are planning any renovation or demolition activity at your facility, you should:

- U Contact your regional environmental agency (in some cities or counties, this may be the health department) before renovating or demolishing a building or structure, regardless of whether asbestos-containing material is present or only suspected.
- U Remove asbestos-containing materials using only qualified personnel in accordance with all applicable local, state, and federal laws. This material must be removed *prior* to any demolition or renovation activity. It is recommended that you review your contractor's employee training records and licenses.
- U Use special handling procedures for asbestos disposal such as asbestos certified contractors for assessment and demolition of pre-1980 buildings, as well as posting of signs at disposal facilities.

For demolition activities, many states have a formal notification process before demolition may begin. For example, Ohio requires at least a 10 day notice before any demolition or construction activity begins. Other requirements may include inspection by a licensed building inspector before construction or demolition may begin. **Check with your state and local authorities to determine whether additional asbestos requirements apply to you.**

6.5.4 Odor Emissions

The combination of a broad regulatory framework, increased sensitivity and demand of the general public for a clean and pleasant environment, and reduced land areas available for isolation of industrial operations from the public areas have forced all types of industries including the food processing industry to control odor emissions. Organic and inorganic compounds emitted from various food processing operations may become nuisances in your community when they carry objectionable odors as perceived by the general public. Though there are no federal regulations for odor emissions, you should be aware that there may be state and local regulations.

There are two basic principles for controlling odors at a food processing plant:

- U Reduction of odors at the generation sources
- U Removal of odors from collection air-streams before the odors are discharged into the atmosphere.

Odors generated from food processing plants usually are a mixture of various organic and inorganic compounds in low concentrations. Most of these compounds are reduced carbon, nitrogen and/or sulfur compounds. Typical odorous compounds encountered in food processing operations include aldehydes, ketones, alcohols, acids, ammonia, amines, sulfides, mercaptans, and hydrogen sulfide. In some cases, the odors also may be caused by VOCs (e.g., VOCs from drying and roasting activities) which are less biodegradable. The physical and chemical characteristics of specific odors are affected largely by the types of odor sources. Effective, application-specific air cleaning technologies are needed to help food processors make their operations environmentally friendly.

*For more information on odor emissions, refer to **Odor Control and Wastewater Treatment**, published by Water Environment Federation and American Society of Civil Engineers (1995).*

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7. HOW DO I COMPLY WITH THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT REGULATIONS?

7.1 Introduction

This section presents an overview of the Emergency Planning and Community Right-to-Know Act (EPCRA) planning, reporting, and notification requirements for your food processing facility. Because of concern over the Bhopal tragedy of 1984 and many state and community right-to-know laws, Congress passed Title III of the Superfund Amendments and Reauthorization Act (SARA Title III) in 1986. Title III of SARA, also known as EPCRA, establishes requirements for federal, state, and local governments and industry regarding emergency planning and “community right-to-know” reporting on hazardous and toxic chemicals. To this end, it requires industry to report detailed information concerning the use, generation, release, and other waste management activities of hazardous and toxic materials.

EPCRA is unique compared to other environmental statutes because it does not establish release limitations, standards of practice, or standards of operation for industry. The purpose of EPCRA is to:

- C Encourage and support industry’s emergency planning for response to chemical accidents (in coordination with state and local governments) through emergency planning and emergency notification; and
- C Provide local governments and the public with information about possible chemical hazards in their communities by requiring facilities to (1) report to their State Emergency Response Commissions (SERCs), Local Emergency Planning Committees (LEPCs), and local fire departments their hazardous chemical inventory, and (2) report to federal and state authorities their toxic chemical releases and other waste management practices.

Under the emergency planning requirements of EPCRA, each state governor must appoint a SERC. Each SERC in turn appoints LEPCs. For addresses for these groups, see Appendix B of this guide. For more information, access <http://www.epa.gov/ceppo/>.

Your facility may be subject to emergency planning, reporting, notification, and response requirements under EPCRA including:

- C Emergency planning (Sections 301-303)
- C Emergency release notification (EPCRA Section 304 and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 103)

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- C Hazardous chemical inventory and reporting (MSDS and Tier reporting) (Sections 311 and 312)
- C Toxic chemical release reporting (Section 313).

The particular substances subject to these EPCRA requirements are defined under 3 statutes; EPCRA, CERCLA, and Occupational Safety and Health Administration (OSHA). They are identified using various terms as shown in Table 7-1 below. Also, the types of substances subject to each of the EPCRA requirements vary. Refer to the sections indicated in Table 7-1 for more information.

Table 7-1. Guide to Substances Subject to EPCRA

Section of the Law	Types of Substances Regulated	CFR Citation
Emergency Planning EPCRA Sections 301-303	EPCRA extremely hazardous substances	40 CFR 355
Emergency Release Notification EPCRA Section 304/CERCLA Section 103	EPCRA extremely hazardous substances	40 CFR 355
	CERCLA hazardous substances	40 CFR 302
Hazardous Chemical Inventory and Reporting EPCRA Sections 311 and 312	EPCRA extremely hazardous substances	40 CFR 370
	OSHA hazardous chemicals	29 CFR 1910
Toxic Chemical Release Reporting EPCRA Section 313	Toxic chemicals	40 CFR 372

Keep in mind the following distinctions among the EPCRA sections; EPCRA Sections 301-303, 311, and 312 focus on chemicals **present at** your facility, whereas EPCRA Section 313 focuses on chemical **manufactured, processed, or otherwise used**. EPCRA Section 304 focuses on emergency notification of a **release** of specific substances.

It is important to note that if you eliminate EPCRA chemicals from your operations through pollution prevention (P2) activities, you also will eliminate the associated planning and notification requirements. P2 is an excellent opportunity to decrease your facility's regulatory burden.

Section 7.2 summarizes the principal planning and reporting requirements for EPCRA Sections 301-303. Section 7.3 presents the emergency notification and release reporting requirements under EPCRA Section 304 and CERCLA Section 103.

Section 7.4 presents the hazardous chemical inventory and reporting requirements under EPCRA Sections 311 and 312.

Finally, Section 7.5 presents an overview of the EPCRA Section 313 reporting requirements and estimation of releases and other waste management quantities. EPA's Office of Pollution Prevention and Toxics (OPPT) has developed substantive guidance for food processors on compliance with EPCRA 313, entitled, *EPCRA Section 313 Reporting*

New Guidance: For more information on EPCRA 313 requirements, see *EPCRA Section 313 Reporting Guidance for Food Processors (EPA 745-R-98-011, September 1998)*.

Guidance for Food Processors (EPA 745-R-98-011, September 1998). The text in Section 7.5 is excerpted from OPPT's guidance for this industry sector. Please refer to the OPPT guidance document for additional information.

7.2 Emergency Planning

The emergency planning sections (Sections 301-303) of EPCRA are designed to develop state and local governments' emergency response and preparedness capabilities through better coordination and planning, especially with the local community.

Under Section 302 of EPCRA, if your food processing facility, no matter how small, has any of the extremely hazardous substances (EHSs) listed in 40 CFR 355 in amounts equal to or in excess of certain minimum amounts (called threshold planning quantities [TPQs]), you must participate in emergency planning activities. EHSs typically found at food processing facilities include ammonia (for refrigeration), chlorine (for disinfection), and nitric and sulfuric acids (for cleaning). The threshold planning and spill/release reportable quantities (see side box) for these chemicals are listed below.

A threshold planning quantity (TPQ) is the amount of an EHS, in pounds, at a facility that triggers a reporting requirement. EHSs and their TPQs are listed in 40 CFR 355.

A reportable quantity (RQ) is the amount of an EHS or CERCLA hazardous substance released into the environment within a 24-hour period. RQs for EHSs are found in 40 CFR 355, Appendices A and B. RQs for CERCLA hazardous substances are found in 40 CFR 302, Table 302.4. The RQ for any other substance is one pound.

<u>Extremely Hazardous Substances</u>	<u>Threshold Planning Quantity (lbs)</u>	<u>Reportable Quantity (lbs)</u>
Ammonia	500	100
Chlorine	100	10
Nitric Acid	1,000	1,000
Sulfuric Acid	1,000	1,000

If your facility has any of the EHSs onsite in quantities equal to or greater than the TPQs, you must notify the SERC and LEPC within 60 days after the EHSs are present in these quantities. For more information on EPCRA Section 302 reporting requirements, contact the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-

Blended Chemicals: When calculating amounts of blended chemicals, it is important to note that only the specific portion of the blend which contains the EHS is counted, not the whole blend. For example, 100 lbs of a 20 percent chlorine compound counts as 20 lbs, not 100 lbs, of chlorine.

9810, or access EPA's Chemical Emergency Preparedness and Prevention Office homepage at <http://www.epa.gov/ceppo/>.

7.3 Emergency Release Notification

The emergency release notification requirements set out in EPCRA and CERCLA enable federal, state, and local authorities to effectively prepare for and respond to chemical accidents. The release notification requirements differ slightly between the two laws, but the requirements are interrelated as explained below. Releases of both EPCRA EHSs and CERCLA hazardous substances are reportable under EPCRA Section 304, whereas only releases of CERCLA hazardous substances are reportable under CERCLA. Another difference between the statutes is EPCRA requires that Section 304 release notifications be provided to SERCs and LEPCs, whereas CERCLA requires that Section 103 release notifications be provided to the National Response Center (NRC).

What is the NRC? The primary function of the National Response Center (NRC) is to serve as the sole national (federal) point of contact for reporting all oil, chemical, and other discharges into the environment anywhere in the U.S. and its territories. For more information on the NRC, access <http://www.epa.gov/oilspill/>.

Releases and Reportable Quantities. The first step in determining if release notification requirements are triggered is assessing whether or not a release has occurred. Under EPCRA, a release is as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including abandonment or discharging of barrels, containers, and other closed receptacles containing any hazardous substance, pollutant, or contaminant. EPCRA's definition includes releases of both EPCRA EHSs and CERCLA hazardous substances (40 CFR 355.20), and EPCRA Section 304 carries an additional requirement that a facility must produce, use, or store the substance in order to have a **reportable release**. The list of EHSs can be found at 40 CFR 355, Appendices A and B. The term **hazardous substance** is defined in CERCLA 101(14), and these substances are listed in 40 CFR 302, Table 302.4.

In order for a release of a EHS or CERCLA hazardous substance to be reportable, a certain amount must be released into the environment within a 24-hour period. This amount, called the **reportable quantity (RQ)**, triggers emergency release notification requirements. For each CERCLA hazardous substance and EHS identified, EPA has designated a reportable quantity (RQ) of 1, 10, 100, 1,000, or 5,000 pounds. Reportable quantities are listed in 40 CFR 355, Appendices A and B.

Notification. In order to ensure proper and immediate responses to potential chemical hazardous, EPCRA Section 304 requires facilities to **notify SERCS and LEPCs** of releases of EPCRA EHSs and CERCLA hazardous substances when the release equals or exceeds the RQ (EPCRA 304(a)). To trigger EPCRA Section 304 notification, there must be:

- C A facility at which a hazardous chemical is produced, used, or stored; **AND** (all of the following)
- A release

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- Of an EHS or CERCLA hazardous substance
- Into the environment
- With a potential to affect human health and the environment offsite
- That equals or exceeds a reportable quantity
- Within a 24-hour period.

The LEPCs and SERCs will coordinate response activity to your spill or accident, and prevent harmful effects to the public. These agencies also may provide instructions to you regarding appropriate response procedures.

Additionally, when there is a release of a CERCLA hazardous substance in an amount equal to or in excess of the RQ for that substance (CERCLA 103(a), 40 CFR 302.6), CERCLA requires the person in charge of a vessel or facility to immediately notify the **National Response Center at 1-800-424-8802**. There are six specific conditions that must be met to trigger the CERCLA requirement for notifying the National Response Center. There must be a:

- C Release
- C Of a CERCLA hazardous substance
- C Into the environment
- C From a vessel or facility
- C That equals or exceeds a reportable quantity
- C Within a 24-hour period.

Releases That Are Not Reportable. There are several types of releases that are excluded from the requirements of both EPCRA and CERCLA release notification. These releases were excluded originally under CERCLA Section 101(22) because they are covered by other regulatory programs. The regulations found at 40 CFR 355.40(a)(2)(v) extend these statutory exclusions under CERCLA to the release reporting requirements under EPCRA. Examples of these instances are included here for your reference (see box).

When No Notification Is Required (40 CFR 355.40):

1. Releases which result in exposure to persons solely within the boundaries of the facility;
2. Federally permitted releases are not reportable [CERCLA Sections 103(a) and (b) and EPCRA Section 304(a)(2)(A)];
3. Releases that are continuous and stable in quantity and rate (as defined in 40 CFR 302.8(b));
4. Application of pesticide products registered under the Federal Insecticide, Fungicide, and Rodenticide Act (CERCLA Section 103(e));
5. Releases not meeting the definition of release under CERCLA Section 101(22); and
6. Any radionuclide release which occurs naturally in soil.

It is recommended that you make a notification if there is any doubt of applicability because serious fines could result if you are supposed to notify and do not.

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Being familiar with your responsibilities for when to report (and when not to report) will help you in responding quickly when a release does occur. When you are required to report, you must complete the initial notification and follow-up actions as discussed below.

Initial Notification. It is very important to know which agency(s) to notify and to do so as soon as practical for any reportable spill. Initial notifications can be made by telephone, radio, or in person. Under EPCRA, initial notification is required **immediately** (see box) upon discovering a spill. Thus the person making the report must use good judgement in determining how much time to spend in collecting information prior to making the notification. This information should include:

Although the term "immediately" is not further defined in the regulations, EPA generally defines immediate notification of LEPCs, SERCs, and the National Response Center as within one hour of discovery of a reportable spill or release.

- C Chemical name/identity of material(s) released
- C Whether the material(s) is an EPCRA extremely hazardous substance (listed in 40 CFR 355, Appendices A and B) or a CERCLA hazardous substance (listed in 40 CFR 302.4)
- C Estimate of the quantity of any material released
- C Time and duration of the release
- C Whether the release was to the air, water, and/or land
- C Any known or anticipated acute or chronic health risks associated with the emergency, and where necessary, advice regarding medical attention necessary for exposed individuals
- C Proper precautions, such as evacuation or sheltering in place
- C Name and telephone number of the person(s) to be contacted for further information.

Follow-up Actions for a Spill or Release. After the initial communication is established with the appropriate agencies, your facility must provide a written follow-up emergency notice, as soon as practicable after the release. The follow-up notice or notices must update information provided in the initial notice and provide information on actual response actions taken, health risks associated with the release, and advice regarding medical attention necessary for exposed individuals.

Your state also may have requirements for notifications and emergency response actions. To identify the appropriate state agencies, call the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

7.4 Hazardous Chemical Inventory And Reporting

Moving from the requirements for releases of EPCRA EHSs and CERCLA hazardous substances discussed above, this section addresses the requirements for having EPCRA EHSs and OSHA hazardous chemicals stored on your property.

Review this section carefully. *There have been several EPA cases against food processors for failure to comply with EPCRA Section 311 and 312 requirements.*

The hazardous chemical inventory and reporting provisions outlined in EPCRA Sections 311 and 312 require you to inventory the hazardous chemicals present onsite at your facility in amounts equal to or in excess of TPQs. This inventory must contain each hazardous chemical's identity, physical and health hazards, and location. There are two reporting mechanisms in the hazardous chemical inventory program:

- A **one-time notification** of the presence of hazardous chemicals onsite in excess of threshold levels (EPCRA Section 311); and
- An **annual notification** detailing the locations and hazards associated with the hazardous chemicals found on facility grounds (EPCRA Section 312).

If your facility meets the applicability criteria described below, you are required to submit these reports to the SERC, LEPC, and local fire department.

Applicability. To be subject to reporting under EPCRA Sections 311 and 312, your facility must meet the applicability criteria (40 CFR 370.20). Applicability is two-fold.

- (1) First, your facility must be regulated by the OSHA's Hazardous Communication Standard (HCS).
- (2) Second, your facility must exceed EPA-established thresholds for hazardous chemicals onsite at any one time.

OSHA's HCS requires facilities to procure or prepare material safety data sheets (MSDSs) for the hazardous chemicals found at the facility (29 CFR 1910.1200). In general, the chemicals regulated by OSHA's HCS pose a hazard to workers using the substances. **Any facility that is required by OSHA to prepare or have available an MSDS for a hazardous chemical is subject to EPCRA Sections 311 and 312 if the chemical is present onsite at any one time in excess of threshold levels.** There is no list of hazardous chemicals subject to reporting. The key to determining whether or not a chemical is considered hazardous is the requirement to have an MSDS.

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Threshold levels. The threshold level varies depending on how the chemical is classified.

- C The reporting threshold for hazardous chemicals that are EPCRA extremely hazardous substances (EHSs) is 500 pounds or that chemical's threshold planning quantity (TPQ), whichever is lower. EHSs are listed in 40 CFR 355, Appendix A and B.
- C The reporting threshold for hazardous chemicals that are **not** EHSs is 10,000 pounds.

Exemptions. Although OSHA requires MSDSs for a large number of chemicals, there are a number of exemptions to the OSHA requirement to maintain MSDSs, **consequently exempting them from EPCRA Sections 311 and 312 reporting.** These are listed in 29 CFR 1910.1200(b)(6).

In addition, SARA Title III Section 311(e) lists five exemptions from the definition of hazardous chemical for purposes of compliance with SARA Title III Sections 311 and 312 (40 CFR 370.2). These exemptions cover chemicals that are either regulated under other programs, do not present a hazard during normal use, are chemicals that the community is already aware of, or are under the control of trained personnel. The exemptions cover:

- C Food and Drug Administration (FDA) regulated substances (e.g., any food, food additive, color additive, drug, or cosmetic regulated by FDA).
- C Solid manufactured items.
- C Substances packaged as consumer products.
- C Medical and research lab materials.
- C Substances used in agricultural operations.

It is important to remember that these exemptions apply to specific chemicals within the scope of the exemption only, **not** to all hazardous chemicals at a particular facility.

Section 311 MSDS and Hazardous Chemical Inventory Reporting. Under Section 311 of EPCRA, you must submit a **one-time notification** identifying the hazardous chemicals (including EPCRA extremely hazardous substances and OSHA hazardous chemicals) present at your facility in amounts equal to or in excess of threshold levels to the SERC, LEPC, and local fire department (40 CFR 370.21).

To meet the reporting requirement, your facility must submit the following information for each EPCRA EHS and OSHA hazardous chemical onsite in amounts that equal or exceed the threshold levels, either:

- C An MSDS (or copies of MSDSs); **or**
- C A list of the EPCRA EHSs and OSHA hazardous chemicals grouped by hazard category. Hazard categories include immediate health hazard, delayed health hazard, fire hazard, sudden release of pressure hazard, or reactive hazard. The list must include the hazardous chemical name or common name and any hazardous component of each hazardous chemical.

MSDSs: Contact your vendor(s) to obtain MSDSs for chemicals onsite.

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The information needed for compiling this list can be obtained by examining the MSDS for each chemical. Again, the MSDSs or list of hazardous chemicals is a one-time submission and there is no form required by EPA. (You should check with your SERC and LEPC to see if they have a required form.)

If, after initial reporting, your facility finds that it has a hazardous chemical that is newly covered in amounts equal to or excess of the threshold level or there has been significant new information on an already reported chemical, you must update the information reported under Section 311. You must supply this supplemental information within 3 months after discovery of significant new information (40 CFR 370.21(c)).

Section 312 Tier Reporting. Under Section 312 of EPCRA, your facility must meet an **annual reporting requirement** for OSHA hazardous chemicals and EPCRA EHSs in amounts equal to or in excess of threshold levels. If equaling or exceeding the threshold levels at any time in the preceding year, you must submit to the SERC, LEPC, and local fire department an “Emergency and Hazardous Chemical Inventory Form.” This form must be submitted by March 1 and covers the previous calendar year.

The reporting thresholds are the same as for submission of MSDSs under EPCRA Section 311: 500 pounds or the TPQ (whichever is lower) for EPCRA EHSs and 10,000 pounds for an OSHA hazardous chemical. Keep in mind that if you equal or exceed these threshold quantities **at any time** during the year, then you are subject to this reporting requirement. The threshold quantities should **not** be considered **the average amount** of a given chemical onsite during the year.

EPA publishes two types of inventory forms, **Tier I** and **Tier II**, for reporting this information. The Tier I form requires facilities to report general information on the amount and location of hazardous chemicals. Tier II forms require more detailed information on each hazardous chemical. At a minimum, you must report the information contained in EPA’s Tier I form.

As required by statute, Tier I information includes the general elements listed below:

- C An estimate (in ranges) of the maximum amount of chemicals for each hazard category (i.e., immediate health, delayed health, fire, sudden release, and reactive) present at the facility at any time during the preceding calendar year;
- C An estimate (in ranges) of the average daily amount of chemicals in each category; and
- C The general location of hazardous chemicals in each category.

While federal regulations require only the submission of a Tier I form, EPA encourages, and some states require, the use of the Tier II form. EPA offers assistance in completing the Tier II form through its *Tier2 Reporting and Inventory System*. This system walks you through the preparation of the Tier II reporting form. For more information, access <http://www.epa.gov/swercepp/tools.html/>.

Some states have their own form and may allow electronic reporting. Contact your state for more information.

7.5 Toxic Chemical Release Reporting— Section 313

Section 313 of EPCRA requires certain designated businesses to submit annual reports (commonly referred to as Form Rs and Form As) on the amounts of more than 600 EPCRA Section 313 chemicals and chemical categories released and otherwise managed (40 CFR 372). EPA selects the chemicals based on the potential for acute health effects, chronic health effects, and environmental effects. The original list of chemicals subject to Section 313 reporting was a combination of chemical lists from the states of New Jersey and Maryland.

All facilities meeting the Section 313 reporting criteria must report the annual releases and/or other waste management activities (routine and accidental) of EPCRA Section 313 chemicals to all environmental media. A separate report is required for each listed chemical that is manufactured (including imported), processed or otherwise used above the reporting threshold. The reports must be submitted to EPA and State or Tribal governments, on or before July 1, for activities in the previous calendar year. The owner/operator of the facility on July 1 is primarily responsible for the report, even if the owner/operator did not own the facility during the reporting year.

EPA can modify the list of chemicals, or industry or the public can petition EPA to modify the list. Therefore, before completing your annual report, be sure to check the most **current** list included with the *Toxic Chemical Release Inventory Reporting Forms and Instructions (TRI Forms and Instructions)*. You can request this package from the Resource Conservation and Recovery Act/Underground Storage Tank (RCRA/UST), Superfund and Emergency Planning and Community Right-to-Know Act (EPCRA) Hotline at 1-800-424-9346 or 703-412-9810 (Washington, DC, metropolitan area).

7.5.1 EPCRA Section 313 Reporting Guidance for Food Processors

To assist food processing facilities in complying with the reporting requirements of EPCRA Section 313 and Section 6607 of the Pollution Prevention Act of 1990 (PPA), EPA's Office of Pollution Prevention and Toxics (OPPT) has prepared a guidance manual, entitled *EPCRA Section 313 Reporting Guidance for Food Processors* (EPA 745-R-98-011, September 1998). This new guidance supplements the *TRI Forms and Instructions*, and supercedes EPA's earlier document, entitled *Section 313 Emergency Planning and Community Right-to-Know Act, Guidance for Food Processors* (June 1990). Additional discussion on specific issues can be found in EPA's current version of *EPCRA Section 313, Questions and Answers*, which is available on EPA's TRI website (<http://www.epa.gov/opptintr/tri>), or by contacting the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

The *EPCRA Section 313 Reporting Guidance for Food Processors (9/98)* includes the following changes or additions: 1) more detailed examples and common industry-specific reporting errors;

2) EPCRA 313 regulations promulgated since 1990; 3) EPA's interpretive guidance on various issues specific to the food processing industry; and 4) input from the National Food Processors Association and the Food Industry Environmental Council. The objectives of the guidance are to reduce the level of effort expended by those facilities that prepare an EPCRA Section 313 report, and to increase the accuracy and completeness of the data reported on Form Rs or Form As by the food processing industry.

OPPT's *EPCRA Section 313 Reporting Guidance* is an essential, industry-specific compliance assistance tool. Acquiring it should be a high priority for environmental managers in the food processing industry. The following sections of this multimedia compliance guide briefly summarize, excerpt, or cross-reference text, tables and industry-specific examples found in OPPT's new guidance for food processors. Consult OPPT's guidance for the wealth of detailed industry-specific examples and the discussions of common reporting errors and compliance issues.

7.5.2 EPCRA Section 313 Reporting Requirements

To understand EPCRA 313 reporting requirements, you must first understand how EPCRA defines the terms, "facility" and "establishment." The term facility is defined as "all buildings, equipment, structures and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or is under common control with such person)." A facility may contain more than one "establishment." An "establishment" is defined as "an economic unit, generally at a single physical location, where business is conducted, or services or industrial operations are performed" (40 CFR 372.3).

Common Error: Multi-Establishment Facilities and Agricultural Operations

Some multi-establishment food processing facilities overlook the fact that they may have to submit Form R or Form A reports for chemicals used in agricultural operations. (See *EPCRA Section 313 Reporting Guidance (9/98)*, pages 2-7 and 2-8 for further explanation.)

The following section briefly describes EPCRA Section 313 reporting requirements to help you determine if these requirements apply to your facility, and if yes, what kind of a report(s) (e.g., Form R or Form A) you should prepare. Note the standard report is Form R. However, to reduce the reporting burden for small businesses, EPA established an alternative threshold reporting level that is discussed later in this section. If your facility does not exceed this level and meets certain other criteria, then you may file Form A -- a Certification Form -- rather than Form R.

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How do you determine if your facility must prepare an EPCRA Section 313 report? The answers to the following four questions will help you decide:

- 1) Is the SIC Code for your facility included in the list covered by EPCRA Section 313 reporting?
- 2) Does your facility employ 10 or more full time employees or their equivalent?
- 3) Does your facility manufacture (which includes importation), process, or otherwise use EPCRA Section 313 chemicals?
- 4) Does your facility exceed any applicable thresholds of EPCRA Section 313 chemicals (either 25,000 pounds per year for manufacturing, or 25,000 pounds per year for processing, or 10,000 pounds per year for otherwise use)?

If you answer “**No**” to any of the first three questions, you are **not** required to prepare any Form R or Form A reports. If you answer “**Yes**” to **all** of the first three questions, you must then address question four. To address question four, you must do the following: a) complete a threshold calculation for each EPCRA Section 313 chemical at your facility; and then, b) for each EPCRA 313 chemical exceeding a threshold, you must submit a Form R or Form A.

To get a clearer picture of the decision making process, refer to Figure 7-1 *EPCRA Section 313 Reporting Decision Diagram*. (This diagram is identical to the one found in the *EPCRA Section 313 Reporting Guidance (9/98)*, page 2-3.)

Question 1: SIC Code Determination

Facilities with certain SIC codes are covered by EPCRA 313 reporting requirements. These include SIC Codes shown in the table below (40 CFR 372.22). For assistance in determining which SIC code(s) best suits your facility, based on the activities onsite, refer to *Standard Industrial Classification Manual*, 1987, published by the Office of Management and Budget.¹

¹See *EPCRA Section 313 Reporting Guidance (9/98)*, pages 2-4 and 2-5 for a discussion of SIC codes and codes of the North American Industry Classification System (NAICS). The NAICS is replacing the SIC system. Dual systems will be used for a transition period which began in 1997. The NAICS uses six digits (vs. four for the SIC) which allows for a finer division of industries in a larger economy. Additional information on the NAICS is available from the U.S. Census Bureau on <http://www.census.gov/epcd/www/naics.html>.

Figure 7-1. EPCRA Section 313 Reporting Decision Diagram

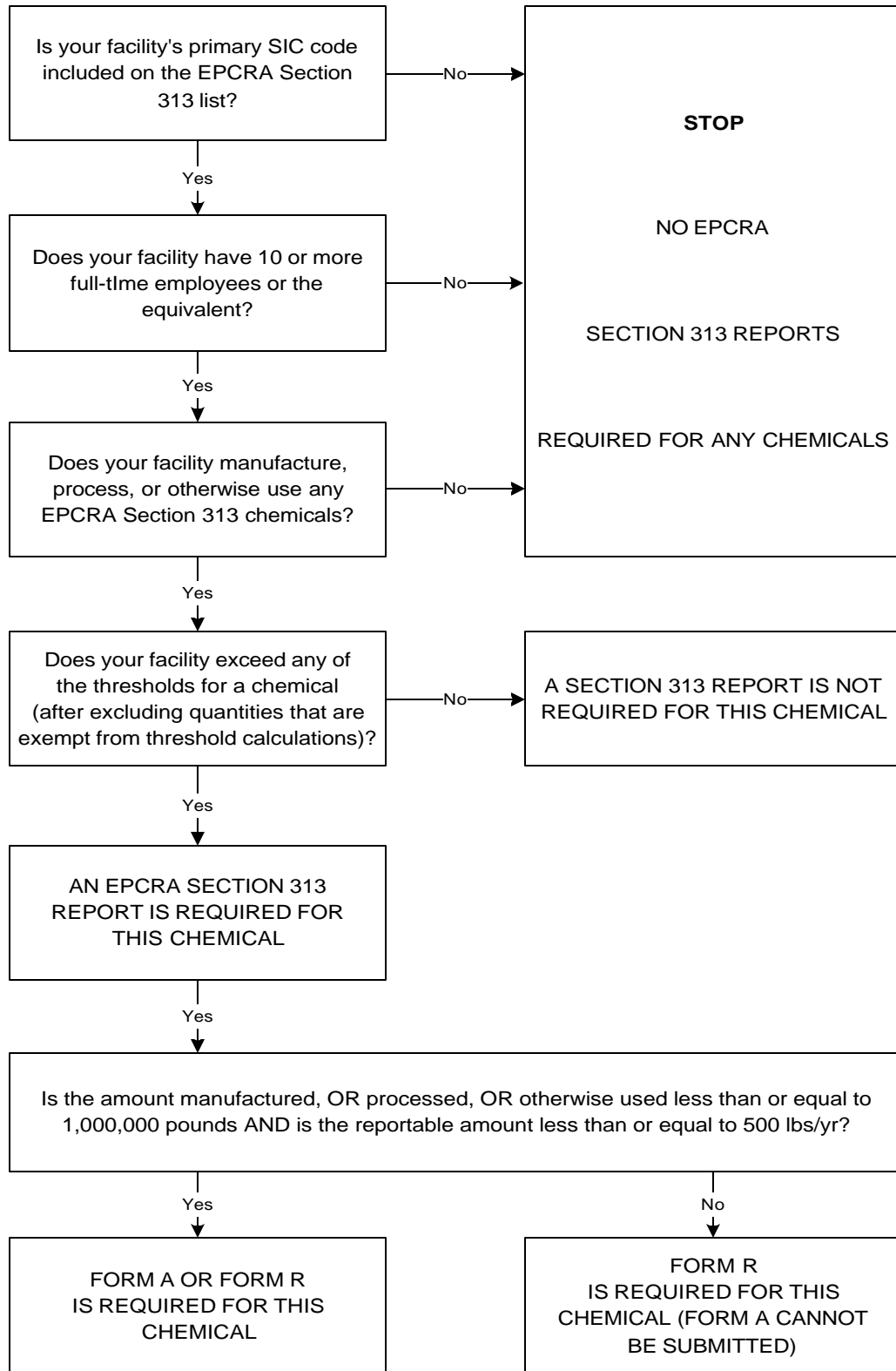


Table 7-2. SIC Codes Covered by EPCRA Section 313 Reporting

SIC CODE MAJOR GROUPS		
SIC Codes	Industry	Qualifiers
10	Metal Mining	Except SIC Codes 1011, 1081, 1094
12	Coal Mining	Except SIC Code 1241
20 through 39	Manufacturing	All SIC Codes
4911, 4931, and 4939	Electric and Other Services and Combination Utilities	Limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce
4953	Refuse Systems	Limited to facilities regulated under RCRA Subtitle C
5169	Chemicals and Allied Products	None
5171	Petroleum Bulk Stations and Terminals	None
7389	Business Services	Limited to facilities primarily engaged in solvent recovery services on a contract or fee basis.

Most food processing facilities are in SIC Major Group 20 (a covered SIC code). If a food processing facility meets the employee and chemical activity thresholds in addition to being in a covered SIC code, it is required to prepare a Form R (or Form A) Report. If your facility has more than one SIC code (i.e., several establishments with different SIC codes are owned or operated by the same entity and are located at your facility), then you must determine what is the **primary** SIC code for your facility according to criteria set up under EPCRA Section 313 requirements. (See *EPCRA Section 313 Reporting Guidance (9/98)*, pages 2-4 to 2-8.)

Question 2: Number of Employees

If your facility has 10 or more full-time employees or the equivalent, you are required to report provided that your facility also is in a covered SIC code and meets the chemical activity threshold for any EPCRA Section 313 chemical. A full time employee equivalent is defined as a work year of 2,000 hours. Therefore, if your facility's employees aggregate 20,000 or more hours in a calendar year, you meet the employee criterion of "10 or more employees or the equivalent." Remember to include any part time and seasonal employees in your calculations, including workers on an adjacent farm that are part of the facility (40 CFR 372.22). (Refer to the example presented in the *EPCRA Section 313 Reporting Guidance (9/98)*, page 2-10.)

Question 3: Chemical Activity Categories

If you answered “Yes” to Questions 1 and 2 above, then you must determine which EPCRA Section 313 chemicals are “manufactured,” “processed,” or “otherwise used” at your facility. You should prepare a list of all chemicals used by **all** establishments at the facility, including the chemicals found in mixtures and trade name products. You should compare your list to the **current** list of EPCRA Section 313 chemicals found in the *TRI Forms and Instructions* for the reporting year.

OPPT has prepared the following table of EPCRA Section 313 chemicals commonly reported for the food processing industry. The table has two columns. The first column lists the industrial process (water treatment, refrigerant uses, reactants, catalysts, etc.), and the second column lists examples of EPCRA Section 313 chemicals reported by this industry. This list is not all inclusive; therefore, you should use it only as a guide. (This table is identical to Table 2-3 in the *EPCRA Section 313 Reporting Guidance (9/98)*, page 2-11.)

Table 7-3. EPCRA Section 313 Chemicals Commonly Encountered in Food Processing

Process	Chemicals
Water Treatment	Chlorine and chlorine dioxide
Refrigerant Uses	Ammonia, ethylene glycol, Freon 113, dichlorodifluoromethane, CFC-114, chlorodifluoromethane
Food Ingredients	Phosphoric acid, various food dyes, various metals (e.g. zinc, copper, manganese, selenium, metal compounds) and peracetic acid
Reactants	Ammonia, benzoyl peroxide, chlorine, chlorine dioxide, ethylene oxide, phosphoric acid, propylene oxide
Catalysts	Nickel and nickel compounds
Extraction/Carrier Solvents	n-Butyl alcohol, dichloromethane, n-hexane, phosphoric acid, cyclohexane, and tert-butyl alcohol
Cleaning/Disinfectant Uses	Chlorine, chlorine dioxide, formaldehyde, nitric acid, phosphoric acid, and 1,1,1-trichloroethane
Wastewater Treatment	Ammonia, hydrochloric acid aerosols, and sulfuric acid aerosols
Fumigants	Bromomethane, ethylene oxide, propylene oxide, and bromine
Pesticides/Herbicides	Various pesticides and herbicides (e.g., aldrin, captan, 2, 4-D, hydrazine, lindane, maneb, parathion, zineb, malathion, atrazine, diazinon bromine, and naphthalene)

Table 7-3. EPCRA Section 313 Chemicals Commonly Encountered in Food Processing (continued)

Process	Chemicals
Byproducts	Ammonia, chloroform, methanol, hydrogen fluoride, and nitrate compounds
Can Making/Coating	Various ink and coating solvents (e.g. glycol ethers, MEK, toluene, methyl isobutyl ketone, xylene), various listed metals (e.g. manganese, nickel, chromium), and various metal pigment compounds (e.g., many pigments contain copper, barium, chromium, zinc, or lead)

Question 4: Threshold Determinations

After you identify the EPCRA Section 313 chemicals at your facility, then you must evaluate the activities involving each chemical, and determine if any of these activities meet any of the activity thresholds. EPCRA Section 313 reporting requirements define three activity categories for each EPCRA Section 313 chemical. These include “manufacturing” (which includes importing), “processing”, and “otherwise using.”

Brief definitions for the manufacturing (including importation), processing, and otherwise using appear in the table below. (This table is identical to Table 2-4 in the *EPCRA Section 313 Reporting Guidance (9/98)*, pages 2-12 and 2-13.)

The EPCRA Section 313 requirements divide each of these activity categories into subcategories. OPPT’s guidance discusses each category and subcategory of activity along with relevant examples from the food processing industry. For more information, refer to the tables in Chapter 3 of the *EPCRA Section 313 Reporting Guidance (9/98)*, pages 3-8, 3-9 and 3-10. These tables are,

Table 3-2 Definitions and Examples of Manufactured Chemicals

Table 3-3 Definitions and Examples of Processed Chemicals

Table 3-4 Definitions and Examples of Otherwise Used Chemicals.

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Table 7-4. Activity Categories

Activity Category	Definition	
Manufacture	To produce, prepare, import, or compound a toxic chemical. "Manufacture" also applies to a toxic chemical that is produced coincidentally during the manufacture, processing, otherwise use, or disposal of another chemical or mixture of chemicals as a byproduct, and a toxic chemical that remains in that other chemical or mixture of chemicals as an impurity during the manufacturing, processing, or otherwise use or disposal of any other chemical substance or mixture. An example would be the production of ammonia or nitrate compounds in a wastewater treatment system.	25,000
Process	To prepare a listed EPCRA Section 313 chemical, or a mixture or trade name product containing an EPCRA Section 313 chemical, for distribution in commerce (usually the intentional incorporation of an EPCRA Section 313 chemical into a product). For example, zinc compounds may be processed as an additive in dog food, and would have to be reported if you exceeded the reporting threshold. Processing includes the preparation for sale to your customers (and transferring between facilities within your company) of a chemical or formulation that you manufacture. For example, if you manufacture a chemical or product, package it, and then distribute it into commerce, this chemical has been manufactured AND processed by your facility.	25,000
Otherwise Use	<p>Generally, use of a listed EPCRA Section 313 chemical that does not fall under the Manufacture or Process definitions is classified as Otherwise Use. A listed chemical that is Otherwise Used is not intentionally incorporated into a product that is distributed in commerce, but may be used instead as a manufacturing or processing aid (e.g., catalyst), in waste processing, or as a fuel (including waste fuel). For example, n-butyl alcohol used as a carrier solvent for spices is classified as Otherwise Used.</p> <p>On May 1, 1997 U.S. EPA revised the interpretation of "otherwise use". The following new "otherwise use" definition becomes effective with the 1998 reporting year (62 FR 23834, May 1, 1997). Otherwise use means "any use of a toxic chemical contained in a mixture or other trade name product or waste, that is not covered by the terms "manufacture" or "process." Otherwise use of a toxic chemical does not include disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction unless:</p> <ol style="list-style-type: none"> 1) The toxic chemical that was disposed, stabilized, or treated for destruction was received from off site for the purposes of further waste management; OR 2) The toxic chemical that was disposed, stabilized, or treated for destruction was manufactured as a result of waste management activities on materials received from off site for the purposes of further waste management activities." 	10,000

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Associated with each activity category is an activity threshold summarized in the next table. These thresholds have been in effect since the reporting year of 1989. The activity thresholds apply to each EPCRA Section 313 chemical. Note that the threshold determination for each of the three activity categories is mutually exclusive of the others. Therefore, you must conduct a separate threshold determination for each chemical for each activity category. If you exceed any one of the activity thresholds, then you must submit a Form R (or Form A) report.

Table 7-5. EPCRA Section 313 Reporting Activities/Thresholds

Chemical Activity	Activity Threshold
Manufacturing	25,000 pounds/year
Processing	25,000 pounds/year
Otherwise Use	10,000 pounds/year

The threshold determination is based **solely** on the quantity **actually** manufactured (including imported), processed, or otherwise used, **not** on the quantity of chemicals stored onsite or purchased. Therefore, EPCRA Section 313 chemicals that are bought and stored, but are not incorporated into a product for distribution **or** not otherwise used onsite during the reporting year, are not counted towards any activity thresholds.

Many EPCRA Section 313 chemicals are present as impurities or as small components of mixtures. These quantities must also be considered in threshold determinations unless the concentration is below the *de minimis* value. In some cases, if a chemical is present below *de minimis* concentration, it may be exempt. See OPPT's guidance (9/98), pages 3-10 to 3-18, for more information on how to evaluate *de minimis* and three other classes of exemptions, including article, facility-related, and activity-related exemptions.

Several chemicals on the EPCRA Section 313 chemical list include qualifiers related to use or form (e.g., fume or dust, solutions, acid aerosols, etc.). Some chemicals are reportable **only if** manufactured by a specific process or in a specified activity category. OPPT's *EPCRA Section 313 Reporting Guidance (9/98)*, pages 3-5 to 3-8, contains an industry-specific discussion of these qualifiers, the associated chemicals and how these typically apply to the food processing industry. A detailed discussion of the qualifier criteria can be found in the *TRI Forms and Instructions*.

To determine if a chemical exceeds a reporting threshold, you must calculate the annual activity usage of that chemical. For example, start with the amount of the chemical at the facility as of January 1; add any purchases during the year and the amount manufactured (including imported); and subtract the amount left in the inventory on December 31. If necessary, adjust the total to account for exempt activities. Then compare the result to the appropriate activity threshold to determine if you are required to submit an EPCRA Section 313 Form R report for that chemical. OPPT's guidance (pages 3-22 and 3-23) provides a blank worksheet and a sample illustration to assist you with threshold calculations.

7.5.3 How to Estimate Releases and Other Waste Management Amounts

You must file a Form R report for **each** EPCRA Section 313 chemical if that chemical exceeds any activity threshold for manufacturing, **or** processing, **or** otherwise use (provided that you also meet the SIC code and employee criteria). However, you may be eligible to file a Form A certification statement, rather than a Form R, provided that you meet certain criteria described below.

The Form R consists of the following two parts:

Part I, Facility Identification Information. Except for the signature, this part may be photocopied and re-used for each Form R you submit. Each Form R must have an original signature.

Part II, Chemical Specific Information. You must complete this part separately for each EPCRA Section 313 toxic chemical or chemical category. Among other items of information in Part II, you must provide the total annual reportable amount. The **reportable amount** is defined as the sum of the onsite amounts released (including disposal), treated, combusted for energy recovery and recycled, combined with the sum of the amounts transferred offsite for recycling, energy recovery, treatment, and/or release (including disposal). This total corresponds to the total of data elements 8.1 through 8.7 on the 1997 version of the Form R. Note: You **cannot** re-use this portion year after year, even if reporting has not changed.

The Form A, also referred to as the "Certification Statement," is an alternative to Form R. Form A first became available in reporting year 1994. EPA developed Form A (59 FR 61488, November 1994) to reduce the annual reporting burden for facilities that meet both of the following criteria:

- Chemical Activity Thresholds: The amount of the EPCRA Section 313 chemical manufactured, or processed, or otherwise used must not exceed one million (1,000,000) pounds. [Note: The threshold determination for each activity category is mutually exclusive of the others; i.e., each threshold must be evaluated independently. Therefore, if the quantity for any one activity threshold **exceeds 1,000,000 pounds**, then your facility **cannot** submit Form A.]

And

- Annual Reportable Amount: The total annual reportable amount of the EPCRA Section 313 chemical **cannot exceed five hundred (500) pounds** per year. As stated above, the **reportable amount** is defined as the sum of the on site amounts released (including disposal), treated, combusted for energy recovery and recycled, combined with the sum of the amounts transferred off site for recycling, energy recovery, treatment, and/or release (including disposal). This

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total corresponds to the total of data elements 8.1 through 8.7 on the 1997 version of the Form R.

The Form A Certification Statement must be submitted for each eligible EPCRA Section 313 chemical. Like the Form R, Form A includes facility identification information. However, Form A does not require your facility to report any estimate of releases and other waste management quantities. Rather, your facility must simply certify that the total annual reportable amount does not exceed 500 pounds for that particular chemical.

For industry-specific assistance in calculating reportable amounts, consult Chapter 4 “Estimating Releases and Other Waste Management Quantities” of OPPT’s *EPCRA Section 313 Reporting Guidance (9/98)*. This chapter provides a detailed, step-by-step discussion of how to calculate the release and other waste management amounts for any Section 313 chemical for which your facility must submit a report. This procedure consists of:

- Preparation of a detailed process flow diagram;
- Identification of potential sources of toxic chemicals released and/or otherwise managed;
- Identification of the potential types of releases and/or other waste management activities from each source; and
- Determination of the most appropriate method(s) for estimating the quantities of listed toxic chemicals and/or other waste management activities.

Chapter 4 of OPPT’s guidance also briefly analyzes twelve chemical use categories commonly found in the food processing industry. For each of these twelve categories, the guidance does the following: lists the commonly used EPCRA Section 313 chemicals; gives an overview of the process involved; identifies the appropriate chemical activity category(ies) and reporting thresholds; describes methods for estimating quantities of chemicals released and otherwise managed as waste; and discusses common reporting errors.

Consult *TRI Forms and Instructions* for detailed directions on how to prepare and submit a Form R or a Form A report for **each** listed EPCRA Section 313 chemical. You have the option of submitting Form R(s) electronically via EPA’s Automated Toxic Chemical Release Inventory Reporting Software (ATRS). EPA encourages the use of ATRS to save you time in data entry and photocopying, and to reduce errors by means of the online validation routines and use of pick lists within the software.

The ATRS can be found on the Internet at <http://www.epa.gov/opptintr/atrs>. It is available in both DOS and Windows versions. Call the ATRS User Support Hotline at 703-816-4434 for more information.

7.5.4 EPCRA Section 313 Recordkeeping

Complete and accurate records are absolutely essential to meaningful compliance with EPCRA Section 313 reporting requirements. Compiling and maintaining good records will help you to

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reduce the effort and cost in preparing future reports, and to document how you arrived at the reported data in the event of an EPA compliance audit. EPA requires you to maintain records substantiating the Form R or Form A submission, for a minimum of three years. Each facility must keep copies of the Form R or Form A along with all supporting documents, calculations, work sheets, and other forms that you use to prepare the Form R or Form A. EPA may request this supporting documentation during a regulatory audit.

Specifically, EPA requires that the following records must be maintained for a period of three years from the date of the submission of a report (summarized from 40 CFR 372.10):

- 1) A copy of each report that is submitted.
- 2) All supporting materials and documentation used by the person to make the compliance determination that the facility or establishment is a covered facility.
- 3) Documentation supporting the report that is submitted, including documentation supporting:
 - C Claimed allowable exemptions;
 - C Threshold determinations;
 - C Calculations for each quantity reported as being released, either on or off site, or otherwise managed as waste;
 - C Activity use determinations, including dates of manufacturing, processing, or use;
 - C The basis of all estimates;
 - C Receipts or manifests associated with transfers to off-site locations; and
 - C Waste treatment methods, treatment efficiencies, ranges of influent concentrations to treatment, sequential nature of treatment steps, and operating data to support efficiency claims.
- 4) All supporting materials used to make the compliance determination that the facility or establishment is eligible to submit a Form A.
- 5) Documentation supporting the Form A, including:
 - C Data supporting the determination that the alternate threshold applies;
 - C Calculations of annual reporting amounts; and
 - C Receipts or manifests associated with the transfer of each chemical in waste to offsite locations.

Because EPCRA Section 313 reporting does not require additional testing or monitoring, you must determine the best readily available source of information for all estimates. Some facilities may have detailed monitoring data and offsite transfer records that are used for estimates, while others may only use purchase and inventory records. Examples of records that you should keep, if applicable, might include:

- C Each Form R or Form A submitted;
- C EPCRA Section 313 Reporting Threshold Worksheets (sample worksheets can be found in Chapter 3 of this document as well as in the *TRI Forms and Instructions*);

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- C Engineering calculations and other notes;
- C Purchase records from suppliers;
- C Inventory data;
- C National Pollutant Discharge Elimination System (NPDES)/State Pollutant Discharge Elimination System (SPDES) permits and monitoring reports;
- C EPCRA Section 312 Tier II reports;
- C Monitoring records;
- C Air permits;
- C Flow measurement data;
- C RCRA hazardous waste generator's reports;
- C Pretreatment reports filed with local governments;
- C Invoices from waste management firms;
- C Manufacturer's estimates of treatment efficiencies;
- C Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) reportable quantity (RQ) reports;
- C RCRA manifests; and
- C Process flow diagrams (including emissions, releases, and other waste management activities).

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8. HOW DO I COMPLY WITH THE HAZARDOUS WASTE REGULATIONS?

8.1 Introduction

As a food processor, you produce wastes that could be hazardous. Therefore, it is important that you identify and manage them properly to protect yourself, coworkers, and others in your community, as well as the environment. As the waste generator, you are responsible for all steps in hazardous waste management, from generation to storage to final disposal. **You can be held liable for any mismanagement of your wastes, even after they leave your facility. So, it is important for you to know the requirements.**

This section explains the hazardous waste law, known as the Resource Conservation and Recovery Act (RCRA), and its regulations which impose requirements on how you , store, must handle and dispose of the wastes you generate in your food processing facility. Sections 8.5 *Compliance Requirements for CESQGs and Section 8.6 Compliance Requirements for SQGs and LQGs* focus on the major federal requirements with which you must comply.

In some instances, the states impose additional and more stringent requirements on how you handle your wastes. It is critical, therefore, that you review you state's requirements and contact your state hazardous waste agency for any additional requirements.

If your facility has an underground storage tank (UST) system, you are subject to RCRA Subtitle I requirements. Section 8.7 *Underground Storage Tanks* provides an overview of these requirements, which pertain to USTs containing petroleum products or substances defined as hazardous under The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). If your facility has aboveground storage tanks (ASTs), see Section 4.6 *How Do I Comply with Oil Pollution Prevention Regulations* for more information?

Here are the steps you should follow to ensure compliance with this law:

- Determine whether you have hazardous waste at your food processing facility
- Determine your hazardous waste generator status
- Meet the major requirements based on your hazardous waste generator status.

Your ability to comply with RCRA regulations depends on your understanding of what constitutes a hazardous waste. This definition is fundamental because it determines how wastes must be managed. It is important to recognize that the definition of hazardous waste is not straightforward.

8.2 What is Hazardous Waste?

The answer to this question is complex and requires you to follow several steps. First you must determine what types of wastes your facility generates and how each waste will be managed. RCRA defines two categories of wastes, solid and hazardous. Hazardous waste is a subset of solid waste. Therefore, if your waste does not meet the definition of solid waste, it will not be hazardous waste by definition.

8.2.1 Solid Waste

The definition of solid waste is so broad that most materials you dispose of fall within it. Under the RCRA statute, a "solid waste" is defined as any solid, liquid, or contained gaseous material that is discarded by being disposed of, burned or incinerated, or recycled (and not excluded under the regulations). The first step to determine whether or not you are generating a solid waste is to identify which of the categories of "secondary materials" your waste fits. These are:

See Section 10.2 for information on managing nonhazardous, solid waste under RCRA Subtitle D.

- Spent material
- Scrap metal
- Listed or characteristic by-product
- Listed or characteristic sludge
- Commercial chemical product.

Specific definitions of each of these can be found in the *Code of Federal Regulations* (CFR) at 40 CFR 261.1. For additional guidance in classifying your wastes according to these categories, see the January 4, 1985 *Federal Register*.

The second step is to identify how you plan to manage the waste. The classification as a "solid waste" will depend on whether you plan to dispose of the waste, burn it for energy recovery, incinerate it, or recycle it, as well as how long you plan to store it prior to recycling it. The most complex questions regarding the definition of solid waste arises in the context of recycling activities. If you plan to recycle your waste, and you have any uncertainty concerning its classification, you should consult your state regulatory agency, EPA regional office, or the RCRA/UST, Superfund and EPCRA hotline at 1-800-424-9346 or 703-412-9810.

There are a number of disposable materials that are excluded from the definition (in RCRA) of solid waste (and thus hazardous waste) including:

- Domestic sewage and any mixture of domestic sewage and other wastes that pass through a sewer system to a publicly owned treatment works (POTW) for treatment. "Domestic sewage" means any untreated sanitary wastes that pass through a sewer system.
- Industrial wastewater discharges that are point source discharges (i.e., they are discharged from a single point or pipeline) and are regulated under Section 402 of the Clean Water Act (CWA). This exclusion only applies to the actual point source discharge. Industrial wastewaters that are being collected, stored, or treated before discharge are not excluded, nor are sludges that are generated by industrial

wastewater treatment. If you are treating your own wastewater, the sludges are considered solid waste, and could be hazardous waste.

8.2.2 Hazardous Waste

Once you have determined that your material to be disposed of is solid waste, you then must determine if it is hazardous. For a waste to be classified as hazardous, it either:

- Is on one of the four lists of hazardous wastes (see *Listed Wastes* below) published in the federal RCRA regulations (40 CFR 261),
- Demonstrates one or more of the four hazardous waste characteristics of ignitability, corrosivity, reactivity, or toxicity (see *Characteristic Wastes* below), **or**
- Is a **mixture** of a listed hazardous waste and other wastes. It is important to note that waste mixtures that include hazardous wastes are regulated as hazardous waste regardless of the proportions of the mixture.

Listed Hazardous Wastes

Your waste is considered a hazardous waste if it appears on one of four lists (see table below) published in the hazardous waste regulations (40 CFR 261 Subpart D). Currently, more than 400 wastes are on these lists. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not properly managed. Even when properly managed, some listed wastes are so dangerous that they are called **acutely hazardous wastes**. Examples of acutely hazardous wastes include wastes generated from some pesticides that can be fatal to humans or animals in low doses.

Each list represents a different category of hazardous wastes and has a different alphabetical letter (F, K, U, and P). The categories are defined by the source of the waste.

<u>List:</u>	<u>Listed hazardous wastes include:</u>	<u>Wastes generated in food processing:</u>
F	The F list (40 CFR 261.31) designates as hazardous particular wastes from certain common industrial or manufacturing processes. Because the processes producing these wastes can occur in different sectors of industry, the F list wastes are known as wastes from nonspecific sources (e.g., degreasing)	Food processors will most likely generate spent solvent wastes, which are F-listed wastes F001-F005.
K	The K list (40 CFR 261.32) designates as hazardous particular wastestreams from certain specific sectors of industry. K list wastes are known as wastes from specific sources.	Food processors typically do not generate these types of wastes.

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<u>List:</u>	<u>Listed hazardous wastes include:</u>	<u>Wastes generated in food processing:</u>
U and P	The U and P lists are similar in that both list as hazardous pure or commercial grade formulations of certain specific unused chemicals. P wastes are all acutely hazardous (40 CFR 261.33).	Food processors may generate these types of wastes (e.g., unused pesticide of pure heptachlor [P059]).

If a waste is not found in any of these four federal lists, it still may be on a state hazardous waste list. For example, many states list waste petroleum oil as a hazardous waste.

Characteristic Wastes

If a waste does not appear on one of the EPA lists discussed above, it may still be considered a hazardous waste if it has one or more of the following characteristics:

- It can readily catch fire and sustain combustion. This is called an **ignitable** waste (40 CFR 261.21). EPA selected a flashpoint test as the method for determining whether a liquid waste is combustible enough to deserve regulation as hazardous. A non-liquid waste is only ignitable if it can spontaneously catch fire under normal handling conditions and can burn so vigorously that it creates a hazard. Ignitable wastes carry the waste code D001. Examples are paint wastes, certain degreasers, or other solvents.

The flashpoint test determines the lowest temperature at which a chemical ignites when exposed to flame.
- It is an acidic or alkaline (basic) waste which can readily corrode or dissolve flesh, metal, or other materials. This is called a **corrosive** waste (40 CFR 261.22). EPA uses two criteria to identify corrosive hazardous wastes. The first is a pH test. Wastes with a pH ≤ 12.5 or ≤ 2 are corrosive under RCRA rules. A waste may also be corrosive if it has the ability to corrode steel in a specific EPA-approved test protocol. Corrosive wastes carry the waste code D002. Examples are waste rust removers, waste acid or alkaline cleaning fluids, and waste battery acid.
- It readily explodes or undergoes violent reactions. This is known as a **reactive** waste (40 CFR 261.23). Reactive hazardous wastes are relatively uncommon, and, in many cases, there is no reliable test method to evaluate a waste's potential to explode or react violently. Therefore, EPA uses a narrative criteria to define most reactive wastes.

Under RCRA, a waste is reactive if it meets any of the following criteria:

- It can explode or violently react when exposed to water or under normal handling conditions;
- It can create toxic fumes or gases when exposed to water or under other conditions (e.g., heat or pressure); or
- It meets the criteria for classification as an explosive under U.S. Department of Transportation (DOT) rules.

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Wastes exhibiting the characteristic of reactivity are assigned the waste code D003. Examples are waste bleaches and other waste oxidizers.

- It is harmful or fatal when ingested or absorbed, or it leaches toxic chemicals into the soil or groundwater when disposed of on land. This is called a **toxic** waste (40 CFR 261.24). You can determine if your waste is toxic by having it tested using the Toxicity Characteristic Leaching Procedure (TCLP). If the waste contains any of the regulated contaminants at concentrations equal to or greater than the regulatory levels, then the waste exhibits the toxicity characteristic. The toxic waste carries the waste code associated with the constituent which exceeded the regulatory level.

The Toxicity Characteristic Leaching Procedure (TCLP) replicates the leaching process and other effects that occur when wastes are buried in a typical municipal landfill.

Mixture Rule and Derived From Rule

The mixture and derived from rules operate differently for listed wastes and characteristic wastes. The mixture rule for listed wastes states that a mixture made up of any amount of a nonhazardous solid waste and any amount of a listed hazardous waste is considered a hazardous waste. In contrast, a mixture involving a characteristic waste is hazardous only if the mixture itself exhibits a characteristic.

The derived from rule governs the regulatory status of materials that are created by treating or changing a hazardous waste in some way. For example, ash created by burning a hazardous waste is considered **derived from** that hazardous waste. The derived from rule for listed wastes states that any material derived from a listed hazardous waste is also a listed hazardous waste. A treatment residue and materials derived from characteristic hazardous wastes are hazardous only if they themselves exhibit a characteristic.

Hazardous Waste Codes

Specific hazardous waste types have designated waste codes. A waste code is a four-digit classification system used by EPA to identify hazardous wastes on labels, shipping papers, and other records. All federal hazardous waste codes begin with a letter and are followed by numbers. All federal **listed** wastes begin with either "F", "K", "U", or "P"; **characteristic** wastes begin with the letter "D." For a complete listing of hazardous waste codes, consult 40 CFR 261. Many states have listed waste numbers that begin with the two-letter state abbreviation followed by two specific numbers that identify the state-listed waste. In order to determine what the waste code is for your hazardous waste, you need to look at the regulations. You should call your state environmental agency to determine where you can obtain a copy of your state's regulations.

8.2.3 Universal Waste

EPA issued the Universal Waste Rule in 1995 as an amendment to RCRA. It provides an alternative and less stringent set of management standards to those in the hazardous waste regulations (40 CFR 260-272) for three specific, but widely generated, types of waste that potentially would be regulated as hazardous. These wastes are:

- C Batteries that are spent and will not be reclaimed or regenerated either at your facility or at a battery recycling/reclamation facility (under 40 CFR 266 Subpart G). Types of batteries that your facility may generate that would be universal wastes include those in electronic equipment, mobile telephones, portable computers, and emergency backup lighting.
- C Pesticides that have been suspended or canceled including those that are part of a voluntary or mandatory recall under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) or by the pesticide registrant; are unused but managed as part of a waste pesticide collection program; or are obsolete or damaged.
- C Mercury thermostats including temperature control devices containing metallic mercury.

The Universal Waste rule establishes requirements applicable to four types of universal waste generators or collectors: small quantity handlers, large quantity handlers, transporters, and destination facilities. Specific requirements of the universal waste rule can be found at 40 CFR 273.

8.3 Are My Wastes Hazardous?

Do you generate hazardous wastes at your facility? Since you are a food processor, the answer will probably be “yes.” For your facility, the hazardous waste identification process involves the following steps, in this order:

- U Complete an inventory of all wastes that are generated by your facility (see Section 3.0).
- U For each waste, determine whether the material in question is a “solid waste” (see Section 8.2.1).
- U Determine whether the solid waste in question is excluded from regulation.
- U Determine whether the solid waste in question is a hazardous waste. You may need to send a sample of your waste to a laboratory for them to determine if the waste is hazardous (see Section 8.2.2).
- U Make a list of all the hazardous waste you have at your facility and determine the waste code for each (see 40 CFR 261).

Under RCRA, it is your responsibility to determine if a waste produced or generated at your facility is hazardous (40 CFR 262.11).

- U** If you are unsure, get help. For assistance, call EPA or your state environmental agency, a consultant, a licensed transporter, or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

As discussed in Section 3.0, hazardous wastes are generated during many food processing operations. Table 3-2 *Waste Analysis for SIC Code 203 Facility* (see Section 3.0) presents some of the typical hazardous wastes generated by food processing facilities. While this list is not all inclusive, it gives you a general idea of the kinds of wastes generated for each operation that are considered to be hazardous.

With your inventory list, you may be able to determine which wastes are hazardous based on knowledge alone. For example, you may use a cleaning solvent that you know is a listed hazardous waste. For wastes whose regulatory status cannot be determined by knowledge alone, the appropriate analysis should be performed in order to determine if any suspected characteristics meet the federal criteria for definition of hazardous wastes.

An important *first* source of information about the chemicals you use is the material safety data sheet (MSDS). The MSDS will identify specific chemical properties of a material, such as whether a material is highly acidic or basic, whether solvents are present, and other chemical properties, such as ignitability (flashpoint). MSDSs will not provide you with all of the answers to your environmental questions, but they can help you identify specific characteristics of your hazardous waste. The MSDS is provided by your chemical supplier and gives general health and safety information about handling these chemicals. To ensure that your MSDSs are current, require your vendors to automatically supply you with an MSDS for new products and to have anyone approving purchases in your business ask for them from the supplier.

If MSDSs do not provide you with enough information to make your determination, consult the RCRA regulations in 40 CFR 261 or call the RCRA/UST, Superfund and EPCRA hotline for assistance at 703-412-9810 or 1-800-424-9346.

8.4 What is My Hazardous Waste Generator Category?

If you are a food processor and your operations cause hazardous waste to be generated, you must now determine your generator category (40 CFR 261). Your generator category is determined by the amount of hazardous waste that you generate each month. There are three federal categories of hazardous waste generators:

- Conditionally exempt small quantity generator (CESQG)
(# 220 pounds (100 kg) of hazardous waste; or # 2.2 pounds (1 kg) acutely hazardous waste per month).
- Small quantity generator (SQG)
(> 220 pounds (100 kg) and < 2,200 pounds (1,000 kg) of hazardous waste per month.
- Large quantity generator (LQG)

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(\$ 2,200 pounds (1,000 kg) of hazardous waste; or > 2.2 pounds (1 kg) acutely hazardous waste; or > 220 pounds spill residue from acutely hazardous waste).

Hazardous waste generators are divided into these three categories, depending on the quantity of hazardous waste generated each month and on the cumulative amount of hazardous waste stored at your food processing facility at any time. The measured amount (by weight) of hazardous waste generated at your facility per calendar month determines which hazardous wastes requirements and standards apply to you.

Determining Your Generator Category

To determine which category applies to your facility, you must count all quantities of listed and characteristic hazardous wastes. These include wastes that are: (1) generated and collected at your facility prior to treatment or disposal; and (2) packaged and transported offsite.

Many hazardous wastes are liquids and are measured in gallons, not pounds. To approximate the number of pounds of liquid you have, multiply the number of gallons by 8.3 (because a gallon of water weighs 8.3 pounds, and many liquids have a density similar to water). Most MSDSs list the density or specific gravity of the product.

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- 27 gallons (about half of a 55-gallon drum) of waste with a density similar to water weighs about 220 pounds (100 kg).
- 270 gallons of waste with a density similar to water weighs about 2,200 lbs (1,000 kg).

Keep in mind that you do NOT have to count the following:

- Wastes that are left on the bottom of containers that have been emptied by conventional means (i.e., pouring or pumping) and where no more than 2.5 cm (1 inch) of residue remains in the bottom of the container or no more than 3 percent by weight of the total capacity of the container remains in the container if the container is less than or equal to 110 gallons in size.
- Residues in the bottom of storage tanks, if the residue is not removed (i.e., residues left in the bottom of the storage container are not counted as long as they are not removed when the tank is refilled).
- Wastes that are reclaimed continuously onsite without storing the waste prior to reclamation.
- Wastes that you have already counted once during the calendar month, and treated onsite or reclaimed in some manner and used again.
- Wastes that are directly discharged to a municipal treatment plant or POTW without being stored or accumulated first. **This discharge to a POTW must comply with the CWA and any local POTW regulations (see Section 4.4 Am I An Indirect Discharger?).**

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- Batteries, pesticides, and mercury thermostats which are regulated under the Universal Waste Rule (40 CFR 273), or lead-acid batteries to be reclaimed (40 CFR 266).
- C Waste oil that meets the criteria for used oil and is to be managed and handled as used oil (40 CFR 279).
- C Scrap metal that is recycled (40 CFR 261.6(a)(3)).

Table 8-1 illustrates the federal generation rates and storage time limits applicable to the generator categories. It is important to note that states may specify different categories than those specified in the federal regulations and you must meet the requirements specified in your state. For example, a state may only have two categories of generators; small and large, and have specific requirements for each of these generator categories.

From Table 8-1, you can see it pays to be in one of the SQG categories. There is more leeway for storage time, which will allow you to more cost-effectively manage your smaller quantities of hazardous waste. In addition, pollution prevention (P2) can help you change your generator status (see Section 11.0 *Pollution Prevention Techniques*).

Table 8-1. Federal Categories of Hazardous Waste Generators and Storage Time Limits Allowed

Generator Category	Monthly Hazardous Waste Generation Rate	Storage Time Limits
Conditionally Exempt Small Quantity Generator (CESQG)	# 220 pounds (100 kg); or # 2.2 pounds (1 kg) acute	No Limit
Small Quantity Generator (SQG)	> 220 pounds (100 kg) and < 2,200 pounds (1,000 kg); or #2.2 lb (1 kg) acute	#180 days or #270 days if waste treatment/disposal facility is >200 miles away
Large Quantity Generator (LQG)	\$ 2,200 pounds (1,000 kg); or > 2.2 pounds (1 kg) acute; or # 220 pounds spill residue from acute	#90 days

8.5 Compliance Requirements for CESQGs

Your food processing facility is considered a CESQG if it consistently generates less than 220 lbs (100 kg) of hazardous wastes per month, and less than 2.2 lbs. (1 kg) of acutely hazardous wastes per month. As a CESQG, your compliance requirements are quite simple. There are three basic hazardous waste management requirements that apply to CESQGs:

- Identify your hazardous and acutely hazardous wastes and know which wastes you generate that are hazardous. As explained in Section 8.3, there are several steps you should follow in your hazardous waste identification process. Please refer back to Section 8.3 for more information. If you are not sure of what you should do,

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get help. This may mean calling EPA or your state environmental agency, a consultant, a licensed transporter, or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

- Do not generate more than 220 lbs (or 100 kg) per month of hazardous waste or more than 2.2 lbs (1 kg) per month of acutely hazardous waste (this includes any wastes you shipped offsite for disposal during that month); and never store more than 2,200 lbs (1,000 kg) of hazardous waste or 2.2 lbs of acutely hazardous waste for any period of time.
- Ensure proper treatment and disposal of your waste. For CESQGs, proper treatment and disposal of hazardous wastes are fairly simple. It involves ensuring the waste is shipped to one of the following facilities, or if you treat (e.g., solvent distillation) or disposed of your hazardous waste at your facility, ensure that your disposal facility is:
 - A state or federally regulated hazardous waste management treatment, storage, or disposal facility (if your waste is hazardous).
 - A facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste.
 - A facility that uses, reuses or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling).
 - A universal waste handler or destination facility subject to the universal waste requirements (if you choose to follow the universal waste requirements, which you are not required to do as a CESQG, see below).

CESQG Self-Transporting of Hazardous Wastes. CESQGs are allowed to transport their own wastes to the treatment or storage facility, unlike SQGs and LQGs who are required to use a licensed, certified transporter. While there are no specific RCRA requirements for CESQGs who transport their own wastes, DOT requires all transporters of hazardous waste to comply with all applicable DOT regulations. Specifically, DOT regulations require all transporters, including CESQGs, transporting hazardous waste that qualifies as DOT hazardous material to comply with EPA hazardous waste transporter requirements found in 40 CFR 263.

- CESQGs are not required by federal hazardous waste laws to train their employees on waste handling or emergency preparedness, but it is strongly advised. **Keep in mind that employees who are responding to releases of hazardous substances and hazardous waste are required to be trained under Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements (see 29 CFR 1910.120).**

You must comply with these requirements to retain your CESQG status, and remain exempt from the more stringent hazardous waste regulations that apply to SQGs and LQGs. However,

it is recommended that you follow the waste storage and handling requirements for SQGs to minimize the possibility of any leaks, spills, or other releases that potentially could cause economic hardship to your facility. Table 8-2 provides a summary of the federal CESQG requirements. Please remember the requirements in Table 8-2 are the **minimum federal** requirements. States may have more stringent and/or different requirements. Contact your state hazardous waste agency for these requirements.

8.6 Compliance Requirements for SQGs and LQGs

If you determine, based on the amount of waste you generate, that you are an SQG or LQG, you must comply with the following requirements:

- Waste identification
- EPA identification number
- Accumulation and storage limits
- Container management
- Personnel training
- Hazardous waste shipment labeling and placarding
- Reporting and recordkeeping requirements
- Contingency planning, emergency procedures, and accident prevention.

Requirements for hazardous waste generators cover the storage and handling, treatment, and disposal of the waste, from generation to final disposal. Table 8-2 provides a summary of the federal SQG and LQG requirements. Please remember the requirements in Table 8-2 are the **minimum federal** requirements. State governments may have more stringent and/or different requirements. Contact your state environmental agency for state requirements.

Waste Identification

As a generator, you must determine whether your waste is hazardous. As explained in Section 8.3, there are several steps you should follow in your hazardous waste identification process (40 CFR 261). Please refer back to Section 8.3 for more information. If you are not sure of what you should do, get help. This may mean calling EPA or your state environmental agency, a consultant, a licensed transporter, or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

EPA Identification Number

Each SQG and LQG is required to obtain an EPA identification number. These 12-character identification numbers are part of a national database on hazardous waste activities. Some states also require conditionally exempt small quantity generators to have identification numbers. Furthermore, companies that transport hazardous waste and facilities that store, treat, or dispose of regulated quantities of hazardous waste generated by food processing facilities must also have EPA identification numbers.

Table 8-2. Summary of Federal Hazardous Waste Generator Requirements

		CESQG	SQG	LQG
EPA/state ID Number		Not federally required	Federally required	Federally required
Monthly Generation Limits (Weight)		#220 lb (100 kg) or #2.2 lb (1 kg) acute	>220 lb (100 kg) and <2,200 lb (1,000 kg) or #2.2 lb (1 kg) acute	\$2,200 lb (1,000 kg) or >2.2 lb (1 kg) acute or #220 lb spill residue from acute
Maximum Onsite Accumulation Limits (Weight)		#2,200 lb (1,000 kg) or #2.2 lb (1 kg) acute or #220 lb spill residue from acute	#13,200 lb (6,000 kg)	No limit
Maximum Onsite Time Limits for Storage		No limit	#180 days or #270 days if waste treatment/disposal facility is >200 miles	#90 days
Container Management		Not federally required	Federally required	Federally required
Reporting and Recordkeeping				
Uniform Hazardous Waste Manifest Exception Reports		Not federally required	Federally required	Federally required
Biennial Reports		Not federally required	Not federally required	Federally required
Land Disposal Restriction Notifications		Not federally required	Federally required	Federally required
Contingency Planning and Notification (including personnel training)		Not federally required	Basic procedures required; employees must know proper waste handling and emergency procedures	Written plan required; hazardous waste handling training program required for employees
Used/Waste Oil Management Standards		Federally required	Federally required	Federally required

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How to obtain a hazardous waste generator number:

- T Call or write your state hazardous waste management agency or EPA regional office and ask for a copy of EPA Form 8700-12 "Notification of Regulated Waste Activity." You will be sent a booklet containing the two-page form and instructions for filling it out. Note that a few states use a form that is different from the EPA form. If you contact your state first, you will be sent the appropriate form to complete.
- T Complete one copy of the form for each of your food processing facilities where you generate or handle hazardous waste. There is no fee associated with filling out this form. Each site or location will receive its own unique EPA identification number. **You must use this identification number on all hazardous waste shipping forms.**
- T Make sure you fill the form out completely and correctly and sign the certification. Send the form to the address listed in the booklet you received with the form.

An EPA identification number is a unique number that applies to a particular food processing facility site or location. **If you move your food processing facility to another location, you must notify EPA or the state of the new location, submit a new form, and obtain a new EPA identification number.** If hazardous waste was previously handled at the new location, and it already has an EPA identification number, you will be assigned that number for your relocated food processing facility.

Onsite Accumulation and Storage Limits

Onsite accumulation (storage) limits are based on the total **weight** of hazardous waste that can be accumulated at any time at your food processing facility before it must be shipped offsite (40 CFR 262.34). Exceedance of the accumulation limits can cause a change in your generator status and, therefore, a change in the applicable regulatory requirements. Onsite accumulation weight limits and storage time limits for each generator status are presented in Table 8-2. Storage time is allowed so that you can accumulate enough hazardous waste onsite in order to make shipping it offsite for treatment or disposal economical.

Container Management

Your food processing facility can store hazardous waste in 55-gallon drums, tanks, or other suitable containers, but it must comply with rules intended to protect human health and the environment and reduce the likelihood of damages or injuries caused by leaks or spills (40 CFR 265). The following list summarizes the most significant requirements for managing containers of hazardous waste, regardless of their size:

- T Establish and clearly mark an accumulation (storage) area for your hazardous waste. This is your designated onsite hazardous waste storage area and is a collection area for your entire facility. The length of time you can store hazardous waste in this area depends on your generator status. The type of area and marking requirements are set by your state. For storage tanks constructed after September

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30, 1986, this area must have a containment system sufficient to hold spills and leaks. The amount of hazardous waste which can be stored onsite is shown in Table 8-2.

- T Properly label and mark all containers of hazardous waste in your hazardous waste storage area. Clearly mark each container with the words "HAZARDOUS WASTE," and with the date the waste was first collected in that container. (Labels for this purpose may be available from the waste hauler or a trade association.) When your waste is shipped offsite, it is important that your transporter is aware of and complies with DOT placarding requirements for the truck used to haul your waste. Further, many states require additional labeling, such as a description of the contents of the container.
- T You can accumulate up to 55 gallons of hazardous waste in properly labeled containers or drums at or near the various parts of your facility where the waste is generated. This is called *satellite accumulation*. Once 55 gallons have accumulated, satellite waste must be moved to your designated onsite hazardous waste storage area prior to shipment offsite.
- T Containers in satellite accumulation areas must be clearly marked with the words "HAZARDOUS WASTE" or with other wording that identifies the contents of the container. Once the amount of waste in the container or drum reaches 55 gallons, it must be marked with the date it reaches that amount, and it must be moved to the designated onsite hazardous waste storage area within 72 hours (3 days). The operator of the process is responsible for this container or drum as long as it is kept separate from the designated storage area.
- T Mark the EPA waste code on the drum. Although marking the EPA waste code on the drum is not required by federal regulations, it is required by most states and is highly recommended.
- T Keep containers in good condition, handle them carefully, and replace any leaking ones. If a container is in poor condition, the waste must be transferred to a container in good condition.
- T Use containers made of or lined with materials that will not react with the waste. Do not store hazardous waste in a container if it may cause ruptures, leaks, corrosion, or other failure.
- T Do not throw away containers with product in them. If you have a container that has less than one inch of product or less than three percent of the total amount of product remaining, the container can be crushed, recycled, or thrown away. Otherwise, you must scrape out the product on the inside and properly manage it as hazardous waste. There is a federal requirement to triple rinse containers that have held acutely hazardous waste prior to considering the containers to be empty. Your state may also mandate this; please contact your state regulatory agency for more information.

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- T Keep containers closed except when adding or removing wastes. Remember, if a funnel remains in a drum, the drum is considered open. Do not handle or store a container in such a way that may rupture it or cause it to leak.
- T Inspect the containers for leaks or corrosion every week. During your inspection, it is recommended that you make sure that:
- All drums are labeled/marked appropriately
 - There is sufficient space to walk in the storage area and there is required space (36 inches) between rows of drums
 - All drums are stacked properly
 - All drum lids are closed tightly
 - There are appropriate signs warning other employees that this is a hazardous waste storage area
 - Drums are not stored onsite longer than you are allowed:
 - LQGs – 90 days
 - SQGs – 180 days or 270 days if the treatment, storage, and disposal facility is more than 200 miles away
 - There is no more waste onsite than is allowed for your generator status
 - Drums containing incompatible hazardous waste are stored separately or protected by a structure, such as a dike or berm.
- Some states may require that you keep a written record of these inspections. Any problems should be corrected immediately. If any corrections are made, they should be noted in a permanent record and kept on file for at least three years.
- T If your facility has outdoor accumulation areas, and if you are storing ignitable or reactive wastes, make sure that containers of these wastes are stored at least 50 feet from the your facility's property line as this creates a protective buffer zone.
- T NEVER store two or more wastes in the same container that could react to cause fires, leaks, or other releases.

Personnel Training

Proper waste handling can save your facility money in waste treatment and disposal and in lost time due to employee illness or accidents. You must train your employees on the procedures for properly handling hazardous waste, as well as on

Keep in mind that employees who are responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements (see 29 CFR 1910.120).

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emergency procedures (40 CFR 262.34(a)). For LQGs, the training must be formalized and be completed by employees within six months of accepting a job involving the handling of hazardous waste, and you are required to provide annual review of the initial training.

It is important to note that training you may be required to conduct by OSHA differs from hazardous waste management training. Make sure you provide both types of training to your employees.

Hazardous Waste Shipment Labeling and Placarding

When you prepare hazardous wastes for shipment, you must put the wastes in properly labeled containers that are appropriate for transportation according to the DOT regulations (40 CFR 262). Your transporter should be able to assist you. You must:

- T Write the manifest document number on the drum label. A blank space intended for this purpose is provided on hazardous waste labels available from label distributors.
- T Label all drums using the four-inch DOT warning labels (available from the waste hauler or a label distributor), which are marked with the proper DOT shipping name and number according to DOT requirements. Usually your hauler will do this for you.
- T Make sure that (if required) the hauler displays the proper 10-3/4" DOT placard on all four sides of the truck that hauls your hazardous waste. Although the hauler usually provides these, you are responsible for making sure your hauler displays the appropriate placard.

If you need additional information, you may wish to consult the requirements for packaging and labeling hazardous wastes found in the DOT regulations. To find out what the requirements are for your specific waste, you should contact your state transportation agency, your hauler, or your waste disposal/treatment facility who can help you understand the DOT requirements. It may be helpful for you to create a shipping manual with guidance for packing, shipping, and disposal/recycling of all wastes leaving your facility.

REMEMBER: Just because you have shipped the hazardous waste off your site and it is no longer in your possession, your liability has not ended. You are potentially liable for cleanup costs under Superfund for any mismanagement of your hazardous waste. The manifest will help you track your waste during shipment and make sure it arrives at its proper final destination.

Reporting/Recordkeeping for Hazardous Waste Management Practices

Your food processing facility is required to meet various reporting and recordkeeping requirements as part of your hazardous waste management obligations. These requirements are summarized below:

Uniform Hazardous Waste Manifest. The Uniform Hazardous Waste Manifest Form (EPA Form 8700-22) is a multi-copy shipping document that reports the contents of your shipment, the transport company used, and the treatment/disposal facility receiving the wastes (40 CFR 262.20).

The manifest form is designed so that shipments of hazardous waste can be tracked from their site of generation to their final destination, or from "cradle-to-grave." The hazardous waste generator, the transporter, and the treatment/disposal facility must each sign this document and keep a copy. The waste disposal/treatment facility also must send a copy back to you, so that you can be sure that your shipment was received.

A copy of the manifest is required to be kept on file at your facility for three years, or until a signed copy of the manifest is received from the waste disposal/treatment facility. The signed copy of the manifest is required to be kept on file for three years. If you do not receive a signed copy from the waste treatment/disposal facility within 30 days, it is a good idea for you to find out why and, if necessary, let the state or EPA know (see Exception Reports).

Tolling Agreements

Note: Small Quantity Generators (SQGs) are not required to prepare a hazardous waste manifest if: (1) the waste is reclaimed under a contractual (tolling) agreement which specifies the type of waste and frequency of shipments, and the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer of the waste; and (2) the generator maintains a copy of the reclamation agreement in his files for a period of at least three years after termination or expiration of the agreement (40 CFR 262.20(e)).

You can obtain blank copies of the manifest form from several sources. To determine the best source for you, use this system:

- If the state to which you are shipping your waste has its own manifest, use that manifest form (your waste transporter will know which manifest form is required). Contact the hazardous waste management agency of that state, your transporter, or the waste treatment/disposal facility to obtain manifest forms.
- If the state to which you are shipping your waste does not have its own manifest, use the manifest of the state in which your waste was generated. Contact your transporter or your state hazardous waste agency for blank forms.
- If neither state requires a state-specific manifest, you may use the "general" Uniform Hazardous Waste Manifest (EPA Form 8700-22). Copies are available from some haulers and waste treatment/disposal facilities.

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When you sign the certification on ITEM 16 of the manifest form, you are personally confirming that:

- The manifest is complete and accurately describes the shipment.
- The shipment is ready for transport.
- You have reduced the amount and hazardous nature of your wastes to the greatest extent possible (within your budget constraints).

Transporters, recyclers, and waste treatment/disposal facilities may require additional information. Check with them before you prepare a hazardous waste shipment. States may also have additional requirements that must be followed. Your hazardous waste hauler often will be the best source for packaging and shipping information and will help in completing the manifest. If you have any trouble obtaining, filling out, or using the manifest, ask your hauler or your waste treatment/disposal facility operator.

Exception Reports. Exception reports document a missing return copy of the hazardous waste manifest. Reports must include a copy of the manifest and a cover letter signed by the generator or authorized representative explaining the efforts taken to locate the waste and the results of those efforts. If you are an SQG, you must submit a copy of the manifest with some indication that you have not received confirmation of delivery within 60 days of the date your waste was accepted for transport. If you are an LQG, you must contact the transporter and/or waste treatment/disposal facility within 35 days of the transporter accepting your waste for shipment to determine its status and submit a report within 45 days. Copies of exception reports must be maintained for three years.

Biennial Reports. If you are an LQG of hazardous waste, you must submit a biennial report (EPA 8700-13A) on March 1 of each even-numbered year to the appropriate state regulatory office (40 CFR 262.41). Some states impose this requirement on SQGs. Biennial report applications and instructions can be obtained from your state office. This report must contain the following information:

- T Your EPA ID number, name, and address.
- T The EPA ID number, name, and address of each offsite waste treatment/disposal facility where waste was sent during the year.
- T A record of your hazardous waste activities for the previous calendar year, including the quantity of waste you generated or accumulated onsite and the quantity you sent offsite.
- T A description of your efforts that year to reduce the toxicity and volume of hazardous wastes generated (i.e., waste minimization efforts).
- T A description of the changes in volume and toxicity of waste actually achieved.
- T The certification signed by you, the generator, or authorized representative.

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Copies of biennial reports must be maintained onsite for three years.

Land Disposal Restriction Notification. Land disposal restrictions (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment of the waste (40 CFR 268). The LDR notification ensures proper treatment of the waste prior to disposal. Recent changes in this regulation have decreased the reporting and recordkeeping burden for you (Federal Register, Volume 62, Number 91; May 12, 1997). Under this amended rule, you are required to provide a **one-time notification** about your waste to the treatment or disposal facility with the first shipment of waste offsite, and keep a copy in your files. The one-time notification applies to shipments of all restricted hazardous waste. No new notification is required unless there is a change in the waste, process, or receiving facility. A change in the waste is a change that affects the determination of which treatment standard applies. If this occurs or there is a change in the receiving facility, you must send a new notice to the receiving facility and place a copy of the new notice in your files (40 CFR 268.7).

The LDR notification must include:

- T EPA hazardous waste code for the wastes (e.g., F002).
- T Corresponding treatment standard(s) as identified in the federal RCRA regulations.
- T Manifest number for that shipment.
- T Certification statement.

As presented in Table 8-2, a LDR notification is required for SQGs and LQGs, unless a tolling agreement (see box titled *Tolling Agreements* on p. 8-16). Copies of the land disposal restriction notification form(s) and the waste analysis reports must be kept for three years (40 CFR 268.7(a)(8)). All records kept in connection with the LDR program may be stored electronically.

Summary of Recordkeeping Requirements. You are required by EPA to keep certain records on file to show that good housekeeping practices and monitoring are being performed at your food processing facility. EPA requires that records be kept on file at your facility for three years (40 CFR 262.40). These records include:

- T Laboratory analyses and waste profile sheets for determining whether wastes generated by your facility are hazardous.
- T Copies of all hazardous waste manifests, LDR notification(s), and exception reports.
- T Copies of all Notification of Hazardous Activity forms submitted to and received from the state or EPA.
- T Copies of all personnel training plans and documentation that indicate employees have completed the required training (LQGs only).
- T Copies of your facility's contingency plan (LQGs only).
- T Copies of your facility's biennial report (LQGs only).

It is a good idea to have these documents filed neatly in one place at your facility. State or federal inspectors will likely ask for copies of these documents while inspecting your facility.

Contingency Planning and Notification

A contingency plan will help you look ahead and prepare for accidents that could possibly occur at your food processing facility (40 CFR 262). If you are an LQG, you are required to have a **written contingency plan**. If you are an SQG, you must have **basic contingency procedures** in place. Although a **written** contingency plan is not federally required for SQGs or CESQGs, it is strongly recommended. It is also important to check with your state and local authorities for any additional contingency plan or emergency preparedness requirements. Table 8-3 presents the contingency plan requirements for LQGs and SQGs.

A contingency plan can be thought of as a set of answers to a series of "what if" questions. For example, "What if there is a fire in the area where solvents are stored?" or "What if I have a spill of hazardous waste or one of my containers leaks?" Emergency procedures are the steps that you should follow if you have an emergency. It is a good idea to make a list of these "what if" questions and to write down specific steps that you would take if the emergency occurred. Review these with your employees so they are also informed about their responsibilities in the event of an emergency.

Emergency Procedures and Accident Prevention

Emergency Planning. Your contingency plan, discussed above, must contain facility-specific details on what you have to do if you have an emergency. Specifically:

- T In the event of a **fire, explosion, or accidental release** of hazardous waste, you must immediately notify the National Response Center if the fire, explosion, or other release could threaten human health outside your food processing facility or when the release has reached surface water.

If you store oil onsite, you may be subject to specific prevention and response planning requirements. See Section 4.6 How Do I Comply With Oil Pollution Prevention Regulations? for more information.

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Table 8-3. Contingency Plan Requirements for LQGs and SQGs

LQG Contingency Plan Contents	SQG Contingency Procedures
<p>Written plan required.</p> <p>The contingency plan must contain:</p> <ul style="list-style-type: none"> • Instructions on what to do immediately whenever there is a fire, explosion, or release. • The arrangements agreed to by local police and fire departments, hospitals, and state and local emergency response teams to provide emergency services. • The names, addresses, and phone numbers of all persons qualified to act as emergency coordinator. • All emergency equipment at the facility. • An evacuation plan. <p>Copies of the contingency plan must be submitted to the local police and fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services. You should maintain documentation showing that local authorities have been notified.</p>	<p>Basic plan required (not required to be written).</p> <p>The contingency procedures include the following:</p> <ul style="list-style-type: none"> • You must have an emergency coordinator (employee) either at the facility or on call who is responsible for coordinating all emergency response measures. • You must post next to the telephone: (1) the name and number of the emergency coordinator; (2) the locations of the fire extinguishers and spill control material; and (3) the telephone number of the fire department. • You must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures.

*The Center operates a 24-hour toll free number: **1-800-424-8802**, or in Washington, DC: **1-202-426-2675**. As soon as possible, you should have the hazardous waste and any contaminated materials or soils cleaned up by an appropriately trained person. Reporting any release and threat of release is required of SQGs and LQGs.*

**IMMEDIATELY CALL
THE NATIONAL RESPONSE CENTER (1-800-424-8802) if:**

- If you have a serious emergency,
- You have placed a call to your local fire department, or
- You have a spill that extends outside of your facility boundaries or a spill that could reach surface water.

GIVE THEM THE INFORMATION THEY ASK FOR.
If you did not need to call, they will tell you.

ANYONE WHO IS REQUIRED TO CALL AND DOES NOT IS SUBJECT TO A \$10,000 FINE, A YEAR IN JAIL, OR BOTH. If you are an owner or manager of a food processing facility and you fail to report a hazardous waste release, you may have to pay for the entire cost of repairing any damage, even if your facility was not the single or main cause of the damage.

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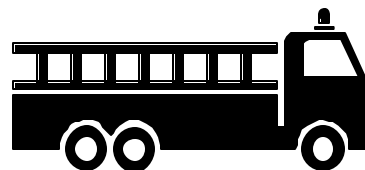
During your telephone call to the National Response Center, you must give the following information:

- T Your facility name, address, and EPA identification number
- T The date, time, and type of incident (e.g., spill, fire)
- T The quantity and type of hazardous waste involved in the incident
- T The extent of injuries
- T An estimate of the quantity and location of any recovered materials, if any.

In addition, reports from LQGs must include an assessment of actual or potential hazards to human health or the environment (where this is applicable).

As stated above, the RCRA regulations require that emergency phone numbers and locations of emergency equipment must be posted near telephones. This means that **next to the phone** you must post:

- T The name, office phone number, home phone number, and address of your emergency coordinator.
- T A site plan or list of nearby:
 - Portable fire extinguishers
 - Special extinguishing equipment (e.g., foam, dry chemicals)
 - Fire alarms (only if not directly connected to fire department)
 - Spill control equipment (e.g., absorbent cotton rags)
 - Decontamination equipment (e.g., safety shower, eye wash fountain)
 - Water at adequate volume and pressure (e.g., water hoses, automatic sprinklers, water spray systems).
- T The telephone numbers of the fire and police departments.
- T Although not required, it is strongly recommended that you also post the following phone numbers by the telephone:
 - State or local emergency response teams
 - Hospital
 - Local ambulance service
 - National Response Center
 - State Department of Public Safety.



All employees who deal with hazardous waste must know proper waste handling and emergency procedures. An employee must be appointed to act as the emergency coordinator to ensure that emergency procedures are carried out in the event of an emergency.

Keep in mind that employees who are responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements (see 29 CFR 1910.120).

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The emergency coordinator (or someone designated by that person) must:

- T Be available 24 hours a day either at the facility or by phone
- T Know whom to call and what steps to follow in an emergency
- T Commit company resources as necessary to respond to an emergency.

Because most food processors are small businesses, the owner or operator probably already performs these functions. Therefore, it is not intended (nor is it likely) that you will need to hire a new employee to fill this role.

Accident Prevention. In accordance with RCRA, your facility must have appropriate cleanup materials and emergency communication equipment for handling hazardous waste at your site. Some of the steps you may need to take to prepare for emergencies at your facility include the following:

- T Make sure that there are no floor drains near the area where solvents are used that lead to the sewer, septic tank, or storm water drain.
- T Store hazardous waste in areas away from doorways. The floor in your storage area should be leak-proof (e.g., concrete with an epoxy coating). If there is a doorway nearby, a concrete barrier is required to prevent the flow of material out of the door in case of a large spill.
- T Provide room for emergency equipment and response teams to get into any area in your facility in the event of an emergency.
- T If you are an LQG, you must write to local fire, police, and hospital officials or state or local emergency response teams explaining that you handle hazardous wastes and ask them for their cooperation and assistance in handling emergency situations.
- T Install and maintain emergency equipment (e.g., an alarm, a telephone, two-way portable radios, fire extinguishers, hoses, and automatic sprinklers) at your facility in hazardous waste storage areas so that it is immediately available to your employees if there is an emergency. This equipment should be inspected monthly.

8.7 Underground Storage Tanks (USTs)

According to EPA, an underground storage tank (UST) is “any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is ten percent or more beneath the surface of the ground.”

For information on aboveground storage tank (AST) requirements, see Section 4.6 How Do I Comply With Oil Pollution Prevention Regulations?

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USTs are subject to strict state and federal requirements. Federal regulations of USTs, contained in 40 CFR 280, require that all regulated UST systems be designed and constructed to retain their structural integrity throughout their operating life, and all USTs and attached piping be protected from corrosion. In addition, all systems must be equipped with spill and overflow protection and leak detection monitoring.

Subtitle I of RCRA governs activities and requirements related to UST systems. Subtitle I established a new and comprehensive regulatory program for UST systems containing petroleum products or substances defined as hazardous under CERCLA. Subtitle I includes the following provisions for UST systems:

- C Design, construction, installation, operating, and notification requirements for new and existing systems;
- C Release detection, reporting, investigation, confirmation, release response, and corrective action for systems containing petroleum or hazardous substances; and
- C System closure requirements.

States generally have the same requirements as RCRA Subtitle I. However, some states (and municipalities) have more stringent UST regulations. You should contact your state UST office and your local municipality to determine if there are additional UST regulations with which you must comply.

The federal UST regulations do not apply to:

- C Tanks with a capacity of 110 gallons or less;
- C Farm or residential tanks holding 1,100 gallons or less of motor fuel used for noncommercial purposes;
- C Tanks storing heating oil, where the oil is used on the property where it is stored;
- C Tanks on or above the floor in underground areas (e.g., basements);
- C Septic tanks and systems for collecting storm water and wastewater;
- C Flow-through process tanks; and
- C Emergency spill and overflow tanks.

Note: EPA defines "heating oil" to include fuel for boilers for process steam generation (40 CFR 280.12).

Requirements for notification, recordkeeping, leak detection, and spill, overflow, and corrosion protection are described below. Federal and state laws mandate strict penalties for failure to report or to respond properly to spills or leakage once detected. Penalties also apply to violations of the requirements for the installation, monitoring, testing, registration, and removal or closure of USTs.

Notification. A facility must report to the regulatory authority on the following occasions:

- C **UST installation.** When an UST is installed, fill out a notification form. The form must be submitted to the responsible state UST program office for all onsite UST systems. The Notification Form includes certification of compliance with federal requirements for installation, cathodic protection, release detection, and financial responsibility for UST systems installed after December 22, 1988.

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- C **Suspected release.** Report suspected releases to the regulatory authority. If a release is confirmed, the facility must also report follow-up actions planned and take corrective actions to correct the damage caused by the UST.
- C **UST closure.** Notify the regulatory authority 30 days before the facility permanently closes the UST.

Recordkeeping. Leak detection, corrosion protection, financial responsibility, closure, and corrective action records must be maintained onsite.

- C Leak detection records include: the past year's monitoring results and most recent tightness test; copies of performance claims; and maintenance, repair, and calibration of leak detection equipment.
- C Corrosion protection records include results of the last two tests proving the cathodic protection system is working and the last three inspections proving that impressed current systems are operating properly.
- C If you are an owner and operator of a petroleum UST (e.g., vehicle fuel tank), you must have financial responsibility documentation showing you (1) have either insurance coverage; a guarantee from another firm; a surety bond; or a letter of credit; (2) have passed a financial test; (3) have a trust fund; (4) participate in a state financial assurance fund; or (5) use another financial method(s) of coverage approved by your state. (Note: if the owner and operator of a petroleum UST are separate persons, only one person is required to demonstrate financial responsibility; however, both parties are liable in event of noncompliance.) (See 40 CFR 280.090.)
- C Closure records document that the UST was removed from service in accordance with federal requirements for notification and correct, safe closure.
- C Corrective action records document that any releases from USTs have been reported to the appropriate agency and have been responded to as required.

Leak Detection. Facilities must check their USTs at least once a month to see if they are leaking. The facility must conduct one of the three following methods of leak detection:

- C All USTs can use **monthly monitoring** consisting of one of the following methods or other methods approved by the regulatory agency:
 - Automatic tank gauging
 - Vapor monitoring
 - Interstitial monitoring with secondary containment
 - Groundwater monitoring
 - Statistical inventory reconciliation.

Check with the state UST program to determine which methods are acceptable.

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- C USTs installed before December 22, 1998 can temporarily use monthly inventory control and annual tank tightness testing. **This is not an acceptable method after December 22, 1998.**
- C USTs installed or upgraded with spill, overfill, and corrosion protection can temporarily use monthly inventory control combined with tank tightness testing every five years. This combined method can be used only for ten years after the tank has been installed or retrofitted with corrosion protection or until December 22, 1998, whichever is later.

In addition, facilities must conduct leak detection on any pressurized piping by (1) monthly monitoring (as described above) or annual line testing, and (2) an automatic flow restrictor, an automatic shutoff device, or a continuous alarm system.

Spill, Overfill, and Corrosion Protection. USTs installed on or before December 22, 1988, must meet spill, overfill, and corrosion protection requirements no later than December 22, 1998. USTs installed after December 22, 1988 were required to be constructed with spill, overfill, and corrosion protection.

- C Spill and overfill protection. USTs must have catchment basins to contain spills. In addition, the facility and the fuel deliverer must follow industry standards for correct filling practices. New USTs must have overfill protection devices when they are installed. The three main types of overfill protection devices are automatic shutoff devices, overfill alarms, and ball float valves.
- C Corrosion protection. Corrosion is the dissolution or gradual wearing away of materials, especially by chemical action. Metal is especially susceptible to corrosion. If your UST or piping is made of metal or has metal components, you must have some form of corrosion protection for them. All corrosion protection systems must be operated and maintained to provide continuous corrosion protection to the metal components of the portion of the UST and piping that are in contact with the ground and routinely contain petroleum products or hazardous substances.

To find out more about federal UST requirements, you can receive free explanatory publications and assistance by calling EPA's RCRA/UST, Superfund and EPCRA hotline at 1-800-424-9346 or 703-412-9810, or by visiting EPA's Office of Underground Storage Tanks website at <http://www.epa.gov/OUST/>. State and local UST requirements can differ from federal requirements so be sure to check with appropriate state and local regulatory agencies.

8.8 Used Oil Management Standards

If you generate used oil at your food processing facility, you are responsible for ensuring that it is managed properly. A generator of used oil is defined by EPA as any business which produces used oil through commercial and industrial operations, or that collects it from

What is used oil? EPA's defines used oil as "any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities."

these operations. The definition of used oil (see box) includes oils that are used as hydraulic fluids as well as oils that are used to lubricate automobiles and other machinery, cool engines, or suspend materials in industrial processes.

As a generator of used oil, you must follow the used oil management standards found in 40 CFR 279. Some of these requirements include:

- T Keeping storage tanks and containers in good condition
- T Labeling storage tanks and containers "Used Oil"
- T Cleaning up any used oil spills or leaks to the environment (see Section 9.0)
- T Using a transporter with an EPA ID number when shipping used oil offsite.

State Requirements

Used oil is not categorized as hazardous waste under federal RCRA requirements, however, it may be under some state regulations. For example, California classifies used oil as hazardous waste. In addition, used oil may have strict disposal requirements in some states. **Be sure to contact your state regulatory agency for information on how to manage used oil.**

8.9 Good Environmental Management Practices

8.9.1 How to Select a Hazardous Waste Transporter and Waste Disposal/Treatment Facility

Carefully choosing a transporter and designating a waste treatment/disposal facility are important. Even when the waste leaves your control, **your facility remains legally responsible** for the proper disposal of your waste and any associated spills or accidents.

You should be aware that under RCRA, transporters are required to:

- Obtain an EPA/state identification number
- Comply with the manifest system
- Respond appropriately to hazardous waste discharges
- Comply with both the RCRA requirements (40 CFR 263) and the DOT regulations (49 CFR 171-179).

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Before choosing a transporter or designating a facility, check with the following sources:

- Your state hazardous waste management agency or EPA regional office, which will be able to tell you whether or not a company has an EPA/state identification number and may know whether or not a company has had any problems. They may also have a list of licensed (approved) transporters.
- Your friends and colleagues in the food processing business who may have used a specific hazardous waste transporter or treatment/disposal facility in the past.
- Your trade association(s) which may keep a file on companies that handle hazardous waste.
- Your Better Business Bureau or Chamber of Commerce to find out if any complaints have been registered against a transporter or facility.

After checking with these sources, contact the transporter and hazardous waste treatment/disposal facility directly to verify that they have an EPA/state identification number, and that they can and will handle your waste. In some states, the transporter and the designated facility may be required to have a special permit to operate. Make sure that the transporter and waste treatment/disposal facility have the necessary permits and insurance and that the transporter's vehicles are in good condition. You may also want to ask them:

- Where the waste is going
- To provide information on their track record
- If they have ever been cited for improper practice.

Checking sources and choosing a transporter and waste treatment/disposal facility may take some time. You should begin checking before you open your shop or well ahead of the time you will need to ship your waste.

8.9.2 Disposing of Hazardous Waste Onsite

You may **not** dispose of your hazardous waste on your property. Additionally, if you discharge more than 15 kg of a *hazardous substance* in a month to the POTW, you must meet certain reporting requirements (see Table 4.7 *Reporting Requirements for All Indirect Discharges*). Typically, discharging any hazardous substance to a sewer is not considered good management practice and in many states it may be illegal. For more information, contact the local wastewater or sewage treatment office or your state hazardous waste management agency.

8.9.3 Good Housekeeping

Good hazardous waste management can be thought of as simply "good housekeeping" practices which include:

- Using fewer hazardous materials
- Reusing materials as much as possible

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- Recycling and reclaiming waste
- Reducing the amount of waste you generate.

To reduce the amount of waste you generate:

- T Do not mix nonhazardous wastes with hazardous wastes (e.g., combining nonhazardous cleaning agents or rags in the same container as hazardous wastes). If you do, the nonhazardous wastes become subject to hazardous waste regulations and you will have more hazardous waste for disposal.
- T Avoid mixing several different hazardous wastes. Doing so may make recycling very difficult, if not impossible. It may also make disposal more expensive.
- T Avoid spills or leaks of hazardous products. The materials used to clean up such spills or leaks also become hazardous wastes.
- T Make sure the original containers of hazardous products are completely empty before you throw them away. Use ALL of the product.
- T Avoid using more of a hazardous product than you need. For example, use no more cleaning solvent than you need to do the job.

Reducing your hazardous waste means saving money on raw materials and reducing the costs to your business for managing and disposing of your hazardous wastes.

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9. HOW DO I COMPLY WITH SPILL OR CHEMICAL RELEASE REQUIREMENTS?

9.1 Introduction

This section provides an overview of the emergency planning, reporting, notification, and response requirements across major statutes administered by EPA, (plus related OSHA requirements) that apply to: (1) the storage of oils and hazardous materials and (2) the spills and releases of pollutants, such as oils, hazardous materials and wastes. The term “hazardous material” is used here in the same way as used in Section 3.0 *Understanding the Process: Inputs, Outputs and Applicable Federal Environmental Regulations*. Because these requirements are explained in detail in the statute-specific sections of the guide, this section does not repeat this information, but rather, briefly compares and contrasts the regulatory approaches and the different terminology for regulated substances.

Check State and Local Requirements: *Your state and municipality may have requirements in addition to the federal requirements with which you must comply. You should check with your state or local environmental agencies to determine these requirements.*

The primary purpose of this section is to assist you in understanding the similarities and differences among these requirements and their interconnections, and to provide a single place of reference against which you should check the applicable regulatory requirements for your inputs and waste outputs. Another purpose is to re-emphasize the importance of complying with these requirements, some of which are relatively new, such as the Risk Management Program under the Clean Air Act. Please read this section very carefully, become knowledgeable about the relationship between these requirements, and make sure that your staff knows what to do in the event of an emergency.

Regulatory Approaches

Some federal statutes, such as the Clean Air Act (CAA), Clean Water Act (CWA), Oil Pollution Act (OPA), and the Resource Conservation and Recovery Act (RCRA), have planning, reporting, notification and response requirements that pertain to spills or releases to **specific environmental compartments** (e.g., air, water, land). For example:

- C CWA and OPA requirements pertain to spills or releases to surface water and/or groundwater.
- C CAA requirements apply to releases to ambient air.
- C RCRA requirements pertain to spills or releases to land.

In addition, some requirements under the CWA, OPA, and RCRA are designed to alert publicly owned treatment works (POTWs) of impacts from spills of oil(s), hazardous waste, or other

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hazardous materials into the sewer system. In addition, there are requirements to notify appropriate authorities of discharges of hazardous waste to septic systems.

In contrast to this approach, the planning, reporting, notification, and response requirements under the Emergency Planning and Community Right-to-Know (EPCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) focus on **specific substances**, irrespective of the environmental compartment into which a spill or release might occur.

For either approach, the particular substances subject to the requirements are defined through the regulations under each federal statute. The terms used for regulated materials under each program differ, and this can be confusing. Table 9-1 *Terms for Regulated Materials Under Various Statutes* shows terms used under the six (6) statutes administered by EPA, plus OSHA. Each program defines and usually lists the materials or substances that are regulated. A material or substance may appear on one or more of these lists. There is, however, no single “master” list to which you can refer. Also these lists may be modified or amended from time to time. Therefore, you should obtain and review each definition and list to determine what materials or substances at your facility may be regulated, and you should keep abreast of relevant changes.

Table 9-1. Terms for Regulated Materials Under Various Statutes

Statute	Term Used	CFR citation
EPCRA	Extremely hazardous substances	40 CFR 355
OSHA	Hazardous chemicals	29 CFR 1910
CERCLA	Hazardous substances	40 CFR 302
CWA	Hazardous substances	40 CFR 116 and 117
OPA	Oil (petroleum or non-petroleum)	40 CFR t 112
RCRA	Hazardous wastes	40 CFR 261
CAA	Regulated substances	40 CFR 68

Organization of this Section

Planning and reporting activities are critical in preventing accidental releases of regulated materials at any facility. For the purposes of this guide, Section 9.2 *Emergency Planning and Reporting Requirements* groups these requirements across several statutes. The term “reporting” is used in a particular way as highlighted in the text box. Similarly, Section 9.3 *Notification and Response Requirements* groups the notification and response requirements across several statutes. This structure for dividing and grouping these requirements was selected solely for the purpose of comparing and contrasting similar requirements across

statutes. Keep in mind, however, that implementation of these requirements—for planning, reporting, notification, and response to releases—at your facility should be integrated.

The term “reporting” as described in Section 9.2 Emergency Planning and Reporting Requirements, refers to the inventory reports that must be made regarding the hazardous chemicals that are stored onsite at a facility. This type of inventory reporting should take place before a spill occurs to ensure proper emergency response to the spill. This reporting is different from the notification requirements (described in Section 9.3 Notification and Response Requirements) triggered when accidental spills or releases do occur.

9.2 Emergency Planning and Reporting Requirements

This section provides an overview of the planning and reporting requirements under each statute. This will allow you to see the similarities and differences, and the interconnections among these requirements. Table 9-2 *Major Federal Regulations With Planning and Reporting Requirements* provides references to these requirements under EPA’s statutes, plus OSHA. For a fuller explanation of these planning requirements, refer to the statute-specific sections of the guide for information and references.

Table 9-2. Major Federal Regulations With Planning and Reporting Requirements

Subject	Law	Reference to Regulation
EPCRA Planning Requirements	EPCRA	40 CFR 355
EPCRA Hazardous Chemical Inventory	EPCRA	40 CFR 370
EPCRA Toxic Chemical Release Reporting	EPCRA	40 CFR 372
SPCC Plans	CWA and OPA	40 CFR 112
OPA Facility Response Plans	CWA amended by OPA	40 CFR 112
CAA Risk Management Plans	CAA Section 112(r)	40 CFR 68
RCRA Contingency Plans	RCRA	40 CFR 262
OSHA Process Safety Management ¹	OSHA	29 CFR 1910
Hazard Communication Standard ¹	OSHA	29 CFR 1910
Hazardous Waste Operations and Emergency Response (HAZWOPER) ¹	OSHA	29 CFR 1910

¹ These requirements are mentioned here because of their relationship with EPCRA, however, they will not be discussed in detail. Please see 29 CFR 1910 for more information.

Table 9-2 includes OSHA requirements because of the relationship between several OSHA programs and EPA's programs--for example, the relationship between CAA Risk Management Plans and OSHA Process Safety Management, and the relationship between EPCRA Hazardous Chemical Inventory Reporting and OSHA's Hazard Communications Standard.

Emergency planning and reporting are important activities at every facility. Your facility can prepare for an accidental spill or release by creating required prevention and response plans, and by participating in local emergency planning activities. A new approach to handle planning requirements is to combine two or more plans into one integrated plan containing all the requirements for your facility. **Before doing this, you should check with your state or your EPA Regional Office to find out if this is an accepted practice.**

9.2.1 EPCRA Emergency Planning and Reporting— Other Than Section 313

Section 7.0 *How Do I Comply With the Emergency Planning and Community Right-to-Know Act Regulations?* is the primary section in this guide to refer to for information about EPCRA requirements. This section contains only a very brief summary. Keep in mind the following, critical distinctions among the sections of EPCRA, as presented in Table 9-3. First, Sections 301-303, 311, and 312 focus on the amount of chemicals **present at** your facility. Whereas Section 313 focuses on the amounts of chemical **manufactured, processed, or otherwise used**.

Table 9-3. Summary of EPCRA Regulatory Criteria

Subject	Statutory Section	Regulatory Criteria	Reference to Regulation
Emergency Planning	Sections 301-303	"Present at"	40 CFR 355
Hazardous chemical inventory and reporting	Sections 311 and 312	"Present"	40 CFR 370
Toxic chemical release reporting	Section 313	"Manufactured, processed or used"	40 CFR 372

Emergency Planning. Congress designed the emergency planning sections (Sections 301-303) of EPCRA to develop state and local governments' emergency response and preparedness capabilities through better coordination and planning, especially with the local community. The responsibility of your facility to participate in emergency planning activities depends on the presence of EPCRA extremely hazardous substances (EHSs) in amounts equal to or in excess of the threshold planning quantities (TPQs). EHSs typically found at food processing facilities include ammonia (for refrigeration), chlorine (for disinfection), and nitric and sulfuric (for cleaning) acids. See Section 7.2 *Emergency Planning* for more information about these requirements.

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Hazardous Chemical Inventory and Reporting (MSDS and Tier Reporting). The hazardous chemical inventory and reporting provisions outlined in EPCRA Sections 311 and 312 require you to take an inventory of the EPCRA EHSs (40 CFR 355, Appendices A and B) and the OSHA hazardous chemicals present onsite at your facility in amounts equal to or in excess of TPQs. Your facility is subject to these reporting requirements if: (1) your facility is regulated under OSHA's Hazard Communications Standard (29 CFR 1910.1210), and (2) your facility equals or exceeds EPA-established thresholds for EPCRA EHSs and OSHA hazardous chemicals onsite at any one time. The thresholds that you must use varies depending on whether the chemical is classified as an EPCRA EHS or OSHA hazardous chemical. See Section 7.4 *Hazardous Chemical Inventory and Reporting* for more information on these requirements.

Exemptions from these requirements exist for specific chemicals under OSHA and EPCRA Section 311(e). One exemption under Section 311(e) covers any food, food additive, color additive, drug or cosmetic regulated by Food and Drug Administration (FDA). Remember, these exemptions apply to specific chemicals within the scope of the exemption only, not to all hazardous chemicals at a particular facility.

- C **MSDS and Hazardous Chemical Inventory Reporting.** Under Section 311, you must submit a **one-time notification** of the EPCRA EHSs and OSHA hazardous chemicals present at your facility in amounts equal to or in excess of the TPQs to the SERC, LEPC, and local fire department. To meet the reporting requirement, your facility must submit either an MSDS **or** a list of the EPCRA EHSs and OSHA hazardous chemicals grouped by hazard category. Information reported under Section 311 must be updated.
- C **Tier Reporting.** Under Section 312, your facility must meet an **annual reporting** requirements for EPCRA EHSs and OSHA hazardous chemicals in amounts equal to or in excess of threshold levels. If your facility equals or exceeds the threshold levels **at any time** (not the average amount onsite) in the preceding year, you must submit to the SERC, LEPC, and local fire department an "Emergency and Hazardous Chemical Inventory Form." This form must be submitted by March 1 and it covers the previous calendar year.

EPA publishes two types of inventory forms, **Tier I** and **Tier II**, for reporting inventory information. While federal regulations require only the submission on a Tier I form, EPA encourages, and some states require, the use of the Tier II form. EPA distributes an electronic version of the Tier II form in both Windows and DOS formats.

For more information on EPCRA planning and reporting requirements, refer to Section 7.0 in this Guide or contact the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810, or access EPA's Chemical Emergency Preparedness and Prevention Office (CEPPO) homepage at <http://www.epa.gov/ceppo/>.

9.2.2 EPCRA Toxic Chemical Release Reporting— Section 313

Section 7.5 *Toxic Chemical Release Reporting - EPCRA Section 313* is the primary section of this guide to refer to for information about EPCRA Section 313 reporting requirements. To assist food processing facilities in complying with the reporting requirements of EPCRA Section 313 and Section 6607 of the Pollution Prevention Act of 1990, EPA's Office of Pollution Prevention and Toxics (OPPT) has prepared a guidance manual, entitled *EPCRA Section 313 Reporting for Food Processors* (EPA 745-R-98-011, September 1998). This new guidance supplements the *TRI Forms and Instructions*. For more information, visit the TRI Homepage, <http://www.epa.gov/opptintr/tri>.)

EPCRA Section 313 requires certain designated businesses to submit annual reports to EPA (commonly referred to as Form R and Forms A) on the amounts of more than 600 EPCRA Section 313 chemicals and chemical categories released and otherwise managed (40 CFR 372). The standard report is Form R. However, to reduce the reporting burden for small businesses, EPA established an alternative threshold reporting level, known as Form A.

EPCRA Reporting Criteria. The following four questions will help you to determine if your facility must prepare a Form R report.

1. Is the SIC Code for your facility included in the list covered by EPCRA Section 313 reporting?
2. Does your facility employ 10 or more full time employees or their equivalent?
3. Does your facility manufacture (which includes importation), process, or otherwise use EPCRA Section 313 chemicals?
4. Does your facility exceed any applicable thresholds of EPCRA Section 313 chemicals?

If you answer “**No**” to any one of the first three questions, you are not required to prepare and submit Form R or Form A reports. If you answer “**Yes**” to all of the first three questions, you must then address question four.

Threshold Determinations. To address question four, you must do the following: a) complete a threshold calculation for each EPCRA Section 313 manufactured, processed or otherwise used at your facility; b) compare these calculations to the reporting thresholds shown below in Table 9-4; and c) for each EPCRA section 313 chemical exceeding a threshold, you must submit a Form R (or a Form A) report.

EPCRA Section 313 reporting requirements define three activity categories for each EPCRA Section 313 chemical. These categories include “manufacturing” (which includes importing), “processing” or “otherwise using.”

Table 9-4. EPCRA Section 313 Activity Categories/Reporting Thresholds

Chemical Activity	Activity Threshold
Manufacturing	25,000 pounds/year
Processing	25,000 pounds/year
Otherwise Use	10,000 pounds/year

These activity thresholds apply to each EPCRA Section 313 chemical. Because each category is mutually exclusive of the others, you must conduct a separate threshold determination for each chemical for each activity category. The threshold determination is based **solely** on the quantity **actually** manufactured (including imported), processed, or otherwise used, **not** on the quantity of chemicals stored on-site or purchased.

Form R/Total Annual Reportable Amount. If your facility exceeds any one of the activity thresholds, then you must submit a Form R (provided that you also meet the SIC code and employee criteria). Among the information you must report for each EPCRA 313 chemical or chemical category that exceeds a reporting threshold, is the “**total annual reportable amount**” of “**releases and other waste management activities.**” This amount is defined as follows: the sum of the on-site amounts released (including disposal), treated, combusted for energy recovery, and recycled, combined with the sum of the amounts transferred off-site for recycling, energy recovery, treatment, and release (including disposal). This total corresponds to the total of data elements 8.1 through 8.7 on the 1997 version of the Form R.

Form A. The Form A report, also referred to as the “Certification Statement” (59 FR 61488, November 1994), is an alternative to Form R. EPA developed Form A to reduce the annual reporting burden for facilities that meet certain criteria. The Form A Certification Statement must be submitted for each eligible EPCRA Section 313 chemical. Form A does **not** require your facility to report any estimate of releases and/or other waste management activities. Rather, your facility must simply certify that the total annual reportable amount does **not exceed 500 pounds** for that particular chemical.

EPCRA Section 313 Recordkeeping. EPA requires you to maintain records substantiating the Form R or Form A submission, for a minimum of three years (40 CFR 372.10). Each facility must keep copies of the Form R or Form A along with all supporting documents, calculations, work sheets, and other forms that you use to prepare the Form R or Form A. EPA may request this supporting documentation during a regulatory audit.

9.2.3 Oil Spill Prevention Plans (SPCC) and Response Plans (FRPs)

SPCC Plans. EPA first issued the Oil Pollution Prevention Regulation, known as the Spill Prevention, Control and Countermeasures (SPCC) regulation, under the CWA in 1973. It established requirements, including the SPCC Plan, for facilities to **prevent** oil spills from reaching navigable waters of the U.S., or adjoining shorelines (40 CFR 112.3 through 112.7). These requirements apply to **nontransportation-related facilities** that meet these criteria:

- c Could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States or upon the adjoining shorelines, **AND**
- c Have (1) an **aboveground** oil storage capacity of more than 660 gallons in a single container; **or** (2) a total aboveground oil storage capacity of more than 1,320 gallons; **or** (3) a total **underground** storage capacity of more than 42,000 gallons.

If your facility is subject to the SPCC requirements based on the above description, EPA requires you to prepare an SPCC plan and conduct an initial screening to determine whether you are required to develop a Facility Response Plan (FRP) (see below). Those facilities that could cause **substantial harm** to the environment must prepare and submit an FRP to EPA for review. **Significant and substantial harm** facilities also must meet these requirements.

SPCC-regulated facilities must also comply with other federal, state, or local laws, some of which may be more stringent.

The SPCC Plan is a written site-specific description detailing how a facility's operation complies with 40 CFR 112. In order to comply with 40 CFR 112, the SPCC Plan must be a carefully thought out plan, prepared in accordance with good engineering practices and which has the approval at a level with the authority to commit the necessary resources. While each SPCC Plan is unique, certain elements must be included in order for the SPCC Plan to comply with the provisions of 40 CFR 112. If a section does not apply to your facility, your Plan must state this. See Section 4.6.2 *SPCC Requirements* for specific elements to include in your SPCC plan.

Facility Response Plans. In 1990, Congress passed the Oil Pollution Act (OPA) which amended Section 311 of the Clean Water Act to require **substantial harm** facilities to develop and implement FRPs. EPA's FRP requirements appeared as a final rule in the Federal Register on July 1, 1994 (40 CFR 112.20 and 112.21 and include Appendices A through F). Under the FRP requirements, owners and operators of facilities that could cause "substantial harm" to the environment by discharging oil into navigable water bodies or adjoining shorelines must prepare plans for responding, to the maximum extent practicable, to the worst case discharge and to a substantial threat of such a discharge of oil.

Facilities subject to the FRP requirements under 40 CFR 112.20 are referred to either as **substantial harm** facilities or **significant and substantial harm** facilities. FRPs from substantial harm facilities are **reviewed** by EPA while FRPs from significant and substantial harm facilities are **reviewed and must be approved** by EPA.

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If subject to the FRP requirements, you must prepare and submit a FRP to the appropriate EPA Regional Office. To assist you in preparing a FRP, EPA has prepared and included a **model facility response plan** in 40 CFR 112.2, Appendix F. EPA recognizes that there may be many facilities with existing response plans prepared to meet other requirements. Under OPA, you do not need to prepare a separate FRP provided that the original response plan:

- (1) satisfies the appropriate requirements and is equally as stringent;
- (2) includes all elements described in the model plan;
- (3) is cross-referenced appropriately; and
- (4) contains an action plan for use during a discharge.

EPA also recognizes that many facilities have established SPCC plans. Although response plans and prevention plans are different, and should be maintained separately, some sections of the plans may be the same. Under OPA regulations, you are allowed to reproduce or use those sections of the SPCC plan in the FRP. For more information on FRPs, see Section 4.6.3 *Facility Response Plans* or visit EPA's Oil Program Homepage at <http://www.epa.gov/oilspill/>.

9.2.4 CAA Risk Management Planning

As required under Section 112(r) of the amended CAA, EPA has promulgated the Risk Management Program Rule (40 CFR 68). The rule's main goals are to **prevent** accidental releases of regulated substances and to **reduce** the severity of those releases that do occur by requiring facilities to develop risk management programs. A risk management program must incorporate three elements: a hazard assessment, a prevention program, and an emergency response program. These elements are to be summarized in a risk management plan that will be made available to state and local government agencies and the public. Besides helping facilities prevent accidents, the rule can improve the efficiency of work operations by ensuring that workers are trained in proper procedures and by using preventive maintenance to reduce equipment breakdowns.

If your facility has more than a **threshold** quantity of any of the **140 regulated substances** in a single process, you are required to develop a risk management program and to summarize your program in a risk management plan by **June 21, 1999**. The plan you submit to EPA must summarize your program and must be made available to the public. Once your plan is submitted, it will be reviewed for accuracy and completeness. A site visit also may be conducted at your facility by either EPA, state, or local officials to determine whether your plan accurately reflects your risk management program in operation.

Regulated Substances.
EPA listed 140 regulated substances by rule published January 31, 1994; and amended the list by rule on December 18, 1997. EPA may amend the list in the future as needed.

To make compliance easier for small businesses, EPA has worked with trade associations and other industry groups to develop a series of **industry-specific brochures** that will assist businesses in creating their risk management programs. In addition, EPA has been working with industry groups (e.g., ammonia refrigeration) to develop model risk management programs. To review this **model program**, refer to EPA's Chemical Accident Prevention and Risk Management Planning website at <http://www.epa.gov/swercepp/acc-pre.htm#Model Plans/>.

For more information about risk management planning requirements and industry-specific brochures, see EPA's Chemical Emergency Preparedness and Prevention Office's Homepage at <http://www.epa.gov/ceppo/> or see Section 6.4 *Risk Management Planning* or Appendix A.3. *Summary of Principal Regulations Under the Clean Air Act* of this document. You also may obtain copies of the rule and a wide variety of technical assistance materials, as well as answers to your specific questions, from EPA's RCRA/UST, Superfund and EPCRA hotline at 1-800-424-9346 or 703-412-9810. Also check with your industry trade association for assistance in communicating with the public about risk management programs.

9.2.5 RCRA Contingency Plans

If you are a **small** or **large** quantity generator of hazardous waste, the emergency preparedness requirements under RCRA require that you develop a contingency plan for responding to spills or releases of hazardous wastes. A contingency plan will help you look ahead and prepare for accidents that could possibly occur at your food processing facility. If you are a large quantity generator (LQG), you are required to have a **written contingency plan**. If you are a small quantity generator (SQG), you must have **basic contingency procedures** in place. Although a **written** contingency plan is not federally required for SQGs or conditionally exempt small quantity generators (CESQGs), it is strongly recommended. It also is important to check with your state and local authorities for any additional contingency plan or emergency preparedness requirements. See Table 8-3 in Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for more information on contingency plan requirements for LQGs and SQGs.

Keep in mind that employees who are responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements (see 29 CFR 1910.120).

9.3 Notification And Response Requirements

Releases or spills can occur, regardless of the amount of planning and prevention activities being conducted. The purpose of this subsection is to provide a single, general reference place of what you are required to do in response to a release or spill to the environment. Depending on the type of material released to the environment, there are various notification and response requirements under several EPA environmental statutes with which you must comply. These regulations are listed in Table 9-5.

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Table 9-5. Major EPA Regulations that Address Notification and Response Requirements

Subject	Law	Reference to Regulation
EPCRA Release Notification	EPCRA	40 CFR 355
CERLCA Release Notification	CERCLA	40 CFR 302
Notification of Spills of Oil	CWA	40 CFR 110, 116, and 117
Notification of Spills of Hazardous Substances	CERCLA	40 CFR 300 and 302
Notification of Slug Loading to POTW	CWA	40 CFR 403
Notification of discharge of hazardous waste to POTW	CWA	40 CFR 403
Notification of discharge of hazardous waste to septic system	CWA	40 CFR 144
RCRA Emergency Response	RCRA	40 CFR 262
RCRA UST Emergency Response	RCRA	40 CFR 280

Notification is the requirement to notify the appropriate authorities of a release to an environmental compartment (e.g., water, air, land). These authorities may include federal, state, and/or local government regulatory agencies, an entity with emergency planning responsibilities such as a LEPC, or an organization responsible for responding to emergencies such as a fire department. The notification requirements are specific to each program/statute.

They are usually, but **not always**, triggered by the spill or release of a defined threshold or quantity of a substance. Knowing how these thresholds or quantities apply to your facility is critical. Sometimes, as in the release of an oil in any amount, or of a CERCLA hazardous substance in an amount that exceeds the reportable quantity, you are required to call the **National Response Center at 1-800-424-8802**. In other instances, such as the release of an EPCRA extremely hazardous substance in an amount that exceeds the reportable quantity, you are required to contact your SERC and LEPC. Table 9-6 summarizes **who** to notify and **when** for each type of notification and response requirement. (Table 9.4 provides CFR citations to each requirement.)

Response requirements specify certain procedures to be followed when responding to a spill or release, such as how to contain the release and who to contact. One of the most important aspects of the notification and response requirements is the timeframe within which the agency or emergency responder must be notified. This timeframe is typically immediately and by telephone. Several statutes require a **written follow up** notification within a specified period of time.

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Table 9-6. Notification and Response Requirements

Subject	Law	Who to Notify	When
EPCRA Release Notification	EPCRA	SERC, LEPC	Immediately
CERCLA Release Notification	CERCLA	NRC	Immediately
Notification of Spills of Oil	CWA	NRC	Immediately
Notification of Spills of Hazardous Substances	CERCLA	NRC	Immediately
Notification of Slug Loading to POTW	CWA	POTW or state authorities	Immediately
Notification of discharge of hazardous waste to POTW	CWA	POTW, State Haz. Waste Authority, EPA Regional Waste Management Div. Director	Immediately; In writing
Notification of discharge of hazardous waste to septic system	CWA	EPA Regional UIC Well Program, and state UIC Program authorities	Immediately
RCRA Emergency Response	RCRA	In event of fire, call local fire department. In event of a fire, explosion or other release that could effect human health outside the facility, or if the spill has reached surface water, call the NRC.	Immediately
RCRA UST Emergency Response	RCRA	State UST permitting agency or EPA Region (whichever currently administers the UST program for your facility).	Within 24 hrs

9.3.1 EPCRA 304/CERCLA Section 103 Notification Requirements

The emergency release notification requirements set out in EPCRA and CERCLA enable federal, state, and local authorities to effectively prepare for and respond to chemical accidents. In order for a release of a EPCRA **extremely hazardous substance (EHS)** or CERCLA **hazardous substance** to be reportable, a certain amount must be released into the environment within a 24-hour period. This amount, called the **reportable quantity (RQ)**, triggers emergency release notification requirements. EHSs and their reportable quantities can be found in 40 CFR 355, Appendices A and B, and CERCLA hazardous substances and their reportable quantities can be found in 40 CFR 302, Table 302.4.

EPCRA Section 304 notification requirements are triggered for your facility if: (1) an EPCRA EHS or CERCLA hazardous chemical is **produced, used, or stored** at your facility; **AND** (2)

there is a release of a CERCLA hazardous substance or EHS into the environment with a potential to affect human health and the environment offsite that equals or exceeds a reportable quantity within a 24-hour period. If a release occurs, your facility is required to **notify the SERCS and LEPCs**. See Appendix B. *Resources* for a list of SERCs and LEPCs.

Under CERCLA, if you are the person in charge of a vessel or facility and there is a release within a 24 hour period of a CERCLA hazardous substance in an amount equal to or in excess of the RQ for that substance (CERCLA 103(a), 40 CFR 302.6), you are required to immediately notify the **National Response Center (NRC) at 1-800-424-8802**. There are six specific conditions that must be met to trigger the CERCLA requirement for notifying the NRC.

Releases That Are Not Reportable. There are several types of releases that are excluded from the requirements of both EPCRA and CERCLA release notification. These releases were excluded originally under CERCLA Section 101(22) because they are covered by other regulatory programs. The regulations found at 40 CFR 355.40(a)(v) extend these statutory exclusions under CERCLA to the release reporting requirements under EPCRA.

Initial Notification. It is very important to notify the proper agency(s) and to do so as soon as practical for any reportable spill. Initial notifications can be made by telephone, radio, or in person. Under EPCRA, initial notification is required **immediately** upon discovering a spill. Thus the person making the report must use good judgement in determining how much time to spend in collecting information prior to making the notification. Specific information, such as the chemical name/identity of material(s) released, will be valuable.

Follow-up Actions for a Spill or Release. After the initial communication is established with the appropriate agencies, your facility must provide a written follow-up emergency notice, as soon as practicable after the release. The follow-up notice or notices must update information provided in the initial notice and provide information on actual response actions taken, health risks associated with the release, and advice regarding medical attention necessary for exposed individuals.

Your state also may have requirements for notifications and emergency response actions. To identify the appropriate state agencies, call the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

9.3.2 CWA/OPA Notification Requirements

Under OPA, EPA has established requirements to report spills of oil and hazardous substances to navigable water of the U.S., including adjoining shorelines. In addition, the requirements of the CWA, OPA and RCRA, are designed to alert POTWs of impacts from spills of oil, hazardous waste or other hazardous substances to the sewer systems. They are also designed to protect septic systems from discharges of hazardous waste.

Releases of Oil and Hazardous Substances to Water

Under the Oil Pollution Prevention Regulations, you are required to meet notification requirements for releases of oil and hazardous substances to navigable water or adjoining shorelines.

Notification - The “One” Immediate Phone Call to the NRC

NATIONAL RESPONSE CENTER

1-800-424-8802

In the Washington, D.C. area:

703-412-9810

**For more information on the NRC, access
<http://www.epa.gov/oilspill/NRC>**

- ? Immediately notify the National Response Center (NRC) of discharges/releases of oils and hazardous substances by calling the NRC number.

- ? If notifying the NRC is not practicable, then immediately notify the pre-designated On-Scene Coordinator (OSC) of EPA or the USCG. (This means that you must know who your designated OSC is before the release or discharge occurs.)

- ? As required by the relevant Area Contingency Plan, report spills to the state, the tribal government, the territory or commonwealth where the spill occurred.

When an oil spill enters into or threatens any navigable water in the United States, coordinated teams of local, state, and national personnel are called upon to help contain the spill, clean it up, and assure that damage to human health and the environment is minimized. EPA has established requirements for reporting spills into navigable waters or adjoining shorelines. Specifically, facilities are required to report discharges of oil in quantities that may be harmful to public health or welfare or the environment.

EPA has determined that discharges of oil in quantities that may be harmful include those that: (1) violate applicable water quality standards; (2) cause a film or “sheen” upon or discoloration of the surface of the water or adjoining shorelines; or (3) cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Reporting to the National Response Center

Any person in charge of a vessel or onshore or offshore facility should notify the NRC at **1-800-424-8802** as soon as he/she had knowledge of a discharge from a vessel or facility. Spills or releases of oil which reach navigable waters or adjoining shoreline (including storm drains) or land areas which may threaten waterways must always be reported to the NRC.



When you contact the NRC, the staff person will ask you for the specific pieces of information. The NRC relays this spill information to EPA and the USCG, depending on the location of the incident. Specifically, representatives of the EPA or USCG, known as On-Scene Coordinators (OSCs), are notified. (See Section 4.6.4 Oil Spill Notification and Response for more information.)

Additional reporting. In addition, if your regulated facility experiences a single discharge of more than 1,000 gallons of oil or discharges oil in harmful quantities into or upon navigable waters in two reportable spill events during any 12-month period, you must submit a spill report in writing to the EPA Regional Administrator within 60 days.

Releases of Hazardous Substances to Water

In the case of a spill of a hazardous substance released over a 24 hour period at your facility or from facility equipment, and the released material enters a “water of the U.S.” in a quantity equal to or exceeding the reportable quantity in CERCLA Section 102, you must notify the NRC as required under CWA Section 311(b); 40 CFR 116 and 117. Also note that if a spill enters a separate storm sewer that discharges to a surface water, it is subject to notification requirements. If the spilled material enters a sewer that discharges to a POTW, and it is not from a mobile source (e.g., a truck), it is not subject to these CWA notification requirements; however, you must immediately notify the POTW.

Slug Loading to POTW

Slug loading is defined as any relatively large release of a pollutant that ordinarily might not cause a problem when released in small quantities. If you know of an occurrence of slug loading at your facility that could cause problems to the POTW, you are required to notify the POTW or state immediately of a discharge of wastewater (40 CFR 403).

Hazardous Waste Sewer Discharge Notification

To make sure that hazardous wastes are not avoiding regulation by being discharged into the sewer, EPA added a provisions to the pretreatment regulations (40 CFR 403) in 1990. You must notify the POTW, your EPA Regional Waste Management Division Director, and the state hazardous waste authority (40 CFR 403) of any discharge to the POTW of a substance that would be a hazardous waste under RCRA if:

- C The waste is not acutely hazardous and **more than 15 kg** (about 2.4 gallons) are discharged in a calendar month; or

- C The waste is acutely hazardous and any amount is discharged.

The hazardous waste sewer discharge notification must be in writing, and include:

- The name of the hazardous waste as listed in 40 CFR 261;
- The EPA hazardous waste number; and
- The type of discharge (e.g., "batch" for a single event spill, such as a drum or container; or "continuous" for a large spill that has not stopped).

If **more than 220 lb** (100 kg, or approximately 25 gallons) of hazardous waste is discharged to the sewer per month by your food processing facility, then you also must include the following information in the notification:

- The hazardous constituents in the waste;
- An estimate of how much hazardous waste (mass and concentration) was discharged to the sewer during that month; and
- An estimate of how much hazardous waste you will discharge in the next 12 months.

You should keep the telephone numbers of the people that you must notify (e.g., the POTW, your EPA Regional Waste Management Division Director, and the state hazardous waste authority) at the facility. Call your EPA and state regulatory agencies to get the appropriate contact numbers.

Hazardous Waste Septic System Notification

If the discharge of any amount of a hazardous waste is to a septic system, you must immediately notify the EPA Regional Underground Injection Control Program and the state Underground Injection Control Program. Call your EPA and state regulatory agencies to get the appropriate contact numbers.

9.3.3 RCRA Emergency Response Requirements

Your RCRA contingency plan should tell you what to do if you have an accidental or emergency release of a hazardous waste at your food processing facility, and what to do in case of emergencies such as fires or explosions (see Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* and Section 9.2.5 *RCRA Contingency Plans* for more information). In the event of a hazardous waste release, RCRA emergency response requirements contain the following procedures for responding to a spill or release of hazardous waste(s):

Under RCRA, materials used in cleanup operations following a hazardous material or oil spill are considered hazardous wastes. These cleanup materials are considered part of your total monthly accumulation and may affect your generator status. See Section 8.0 for information on determining generator status.

- Contain the flow of hazardous waste to the extent possible, and as soon as is possible, clean up the hazardous waste and any contaminated materials or soil.

- In the event of a fire, call the fire department and, if safe, attempt to extinguish the fire using a fire extinguisher. After the fire is out, contain the release as described above.
- In the event of a fire, explosion, or other release that could threaten human health outside the facility, or if you know that the spill has reached surface water, follow the instructions provided in Section 9.3.2.

All employees must know proper waste handling and emergency procedures. In addition, a person at your facility must be appointed to act as the emergency coordinator to ensure that emergency procedures are carried out properly. The responsibilities of the emergency coordinator are: (1) he/she will be available 24 hours a day (at the facility or by phone); and (2) he/she will know whom to call and what steps to follow in an emergency. See Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for more information.

Keep in mind that employees who are responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements (see 29 CFR 1910.120).

9.3.4 RCRA UST Emergency Response Requirements

RCRA includes emergency response requirements for leaking underground storage tanks (USTs) (in 40 CFR 280.53), including reporting, response, and cleanup procedures. If your facility has USTs that contain petroleum or hazardous substances, and you identify any of the following conditions associated with your UST(s), you must report:

- Unusual operating conditions exist (e.g., erratic behavior of product dispensing equipment, sudden loss of product from the UST system, or an unexplained presence of water in the tank) unless due to defective but not leaking equipment;
- Monitoring results (see Section 8.0) indicate that a release has occurred; or
- Regulated substances are observed or discovered at the UST site (e.g. free vapors in the soils, basements, sewer and utility lines, and/or a sheen on nearby surface waters).

Your report should be made within 24 hours to the state UST permitting agency or the EPA Region, whichever currently administers the UST program for your facility. To help identify who to contact, call EPA's RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810 or visit EPA's Office of Underground Storage Tanks website at <http://www.epa.gov/OUST/>.

In addition to this report, RCRA (40 CFR 280) requires that you immediately contain and clean up a release from an UST that contains:

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- Petroleum, where the spill exceeds 25 gallons or causes a sheen on a nearby surface water, or is less than 25 gallons but cannot be cleaned up within 24 hours.
- A CERCLA hazardous substance (listed at 40 CFR 302.4, Table 302.4) above the reportable quantity, or below the reportable quantity but cannot be cleaned up within 24 hours.

Following notification, response actions required for leaking USTs include taking immediate action to prevent any further release of the regulated substance into the environment, and identifying and mitigating fire, explosion, and vapor hazards. The owner/operator must submit a report summarizing initial abatement measures (usually within 20 days) including:

- Removal of the regulated substance from the UST;
- Inspection of aboveground or exposed below ground releases and preventing migration of the substance into surrounding soils and ground water;
- Continued monitoring and mitigating safety hazards;
- Remedying hazards posed by contaminated soils that have been excavated or exposed; measuring for the presence of a release where contamination is most likely to exist.

Several follow-up procedures (initial site characterization, free product removal, and investigations for soil and groundwater cleanup, and corrective action plan) may be required (see 40 CFR 280.63 - 280.66). State requirements for response and clean up activities vary; therefore be sure you contact the appropriate implementing agency (state or EPA region) for your facility for additional requirements that may apply. See Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for more information.

9.4 Summary

This section has highlighted some of the similarities, differences, and complexities of EPA's planning, reporting, notification, and response requirements under the various federal statutes. The complexity stems, in part, from the differences in statutory approach. Some statutes have requirements that pertain to spills or releases to specific environmental compartments (e.g., water, air, land), whereas other statutes have requirements that focus on specific substances, irrespective of the environmental compartment to which they are released.

It is very important to understand the differences as well as the interconnections among these requirements in order to prepare the appropriate plans for your facility, complete the required reporting activities for hazardous materials that you have onsite, and respond appropriately to releases and spills. In addition, you may reduce your liability by preventing potential releases or responding properly in the event of a release. Don't rely solely on the information in this section to meet these requirements. You must review the regulations thoroughly to figure out your responsibilities and comply with them. Contact your EPA and state regulatory agencies for assistance and additional information.

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10. OTHER MAJOR ENVIRONMENTAL STATUTES AND REGULATIONS: CERCLA, RCRA SUBTITLE D, FIFRA AND TSCA

In addition to the major statutes discussed previously in this guide, there are other environmental statutes and regulations that you must comply with as a food processing facility. These include:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements apply to all food processing facilities that release hazardous substances into the environment.
- Subtitle D of the Resource Conservation and Recovery Act (RCRA). Subtitle D requirements apply to all food processing facilities that dispose of solid, nonhazardous wastes.
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA requirements apply only to those facilities that apply and store pesticides, such as herbicides, insecticides, and rodenticides.
- Toxic Substances and Control Act (TSCA). TSCA requirements apply to facilities subject to the TSCA Chemical Inventory Update, and may apply to those facilities that manage substances such as asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

10.1 Comprehensive Environmental Response, Compensation, and Liability Act

Under CERCLA, commonly known as Superfund, EPA can respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. Under the **hazardous substance release reporting regulations** of CERCLA Section 103, (40 CFR 302), your facility is required to report to the National Response Center (NRC) any release into the environment of a hazardous substance that exceeds the reportable quantity for that substance. More than 700 hazardous substances are subject to the emergency notification requirements under CERCLA Section 103(a) (40 CFR 302.4) as well as those on the list of “extremely hazardous substances” under EPCRA (40 CFR 355). See Section 7.0 for more information about both EPCRA and CERCLA notification requirements.

In response to releases, EPA implements **hazardous substance responses** according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan

(NCP) (40 CFR 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as “removals.” While EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites, both EPA and states can act at other sites. In addition, EPA can force parties responsible for environmental contamination to clean up the contamination or reimburse the Superfund for response or remediation costs incurred by EPA. EPA encourages community involvement throughout the Superfund response process.

Note: EPA’s RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810 provides information and references guidance pertaining to the Superfund program.

10.2 Subtitle D of the Resource Conservation and Recovery Act

Subtitle D of RCRA and its implementing regulations basically apply to the management of solid, nonhazardous waste and its disposal in landfills. See Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for a definition of solid waste. A nonhazardous waste is defined as any garbage, refuse, or sludge from waste treatment plants, water treatment plants, or air pollution control equipment. Some examples of nonhazardous food processing solid wastes include discarded cardboard, food wastes, waste papers, and other food packaging materials. A description of typical solid wastes generated by food processing operations is presented in Section 3.0, Table 3-2 *Waste Analysis for SIC Code 203 Facility* of this guide. While this list is not all inclusive, it gives you a general idea of the kinds of solid wastes generated for each operation.

Subtitle D applies to your food processing facility because it prohibits open dumping of solid, nonhazardous wastes. Programs addressing the disposal of solid, nonhazardous wastes are developed and enforced at the state or local level. You should contact your state regulatory agency or a local reputable waste contractor for more information on proper disposal practices.

To reduce the volume of solid, nonhazardous wastes requiring land disposal, you are encouraged to recycle or reuse as many waste materials as possible. Keep in mind that all pollution prevention activities should be carried out in accordance with food safety requirements. Many states have recycling programs in place for a variety of waste materials, particularly glass, plastic, paper, and cardboard. You should contact your State Pollution Prevention Office to get information on the recycling programs available in your area. In addition to state programs, there may be local recycling requirements. Check with your local regulatory agency for more information. See Appendix B *Resources* for information on state contacts, etc.

10.3 Federal Insecticide, Fungicide, and Rodenticide Act

This section describes the requirements for managing pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as well as the requirements under the Food Quality Protection Act (FQPA).

10.3.1 Use of Pesticides in the Food Processing Industry

FIFRA primarily regulates the manufacture and registration of pesticides (40 CFR Parts 152 and 156), but important requirements also exist for pesticide **users**. Your food processing facility may at some time store, apply (or have applied), and dispose of pesticides. There are many types of pesticides, including herbicides, insecticides, rodenticides, and antimicrobial pesticides (e.g., disinfectants, sanitizers). Pesticides must be applied only according to label directions established by EPA. Using a pesticide in a manner inconsistent with its labeling constitutes misuse and is illegal [FIFRA Section 2 (ee)].

Pesticides can be used to control a variety of pests that are associated with food processing facilities in the U.S., including:

- Birds (e.g., English sparrows, pigeons, and starlings)
- Weeds
- Rodents (e.g. house mouse, rat, and roof rat)
- Insects (e.g., cockroaches, moths, beetles, flies, ants).

These pests can be controlled using direct application of the appropriate avicide, herbicide, rodenticide, or insecticide; or by fumigants. Fumigants are chemicals that are in the gas phase at effective temperatures, and they penetrate cracks, crevices, and the commodity being treated. Fumigants, while toxic to insects, rats, birds, mammals, weed seeds, nematodes and fungi, are also highly toxic to humans and may leave toxic residues or tastes or odors. Fumigants can be applied by several methods, are readily available, and are economical to use. They must be applied with the proper protective equipment and by certified applicators.

Herbicides can be used to eliminate or inhibit tree and weed growth around facilities, while insecticides and rodenticides may be used to control pests.

Antimicrobial pesticides comprise a broad range of products designed to control undesirable microorganisms such as bacteria, viruses, or algae on non-living objects (inanimate) or surfaces, and on raw fruits and vegetables (FIFRA Section 2(mm)(1)(A)). Some antimicrobial pesticides are used to sterilize, disinfect, or sanitize certain items, including food preparation areas. While primarily regulated under FIFRA, the FQPA changes the jurisdiction of some antimicrobial products from FIFRA to the FQPA (see Section 10.3.2). Since late 1996, the

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Antimicrobials Division within EPA's Office of Pesticide Programs (OPP) has been responsible for all activities related to the regulation of antimicrobial pesticides. For more information on antimicrobial pesticides, access the OPP website at http://www.epa.gov/oppfead1/cb/csb_page/qsas/antimic.htm/ or contact the Antimicrobial Division Ombudsman at 1-800-447-6349.

Requirements for Pesticide Use

FIFRA requires that all pesticides be registered for every intended use, and that labels containing instructions for proper storage, use, and disposal accompany each pesticide marketed. Application and handling requirements are specific to each pesticide product. Excess pesticides that must be disposed of may, in some cases, be considered hazardous waste, and must be managed accordingly (see Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?*). Under FIFRA, the use of pesticides in a manner inconsistent with labeling established by EPA is illegal. You can be held responsible if any pesticides applied on your property are misapplied or mishandled. The "label is the law."

RUPs: When Your Facility Contracts for Pesticide Application. While some facilities may elect to hire a contractor for all of their pesticide applications, all facilities may have to contract out pesticide applications at one time or another. Under FIFRA, some pesticides, which are referred to as restricted use pesticides (RUPs), have been deemed by EPA to have high toxicity or to pose particular environmental hazards. Pesticide labels will clearly state whether a particular pesticide is restricted use only.

*When a pesticide is applied by a contractor, the contractor **and** the person contracting for the service may be held responsible for pesticide misuse.*

RUPs may only be applied by **certified** pesticide applicators; there are two types: "commercial" and "private." A **commercial** applicator is certified to apply pesticides to other people's property. Unless your facility chooses to certify some employees in pesticide application, applications of RUPs will require the use of a certified commercial applicator.

You should always verify that your contractor, or in the case of RUPs, the certified commercial applicator, uses the correct pesticide application rate and method. The pesticide label contains detailed information on appropriate rates and methods of application. The actual application should be observed to ensure that application methods are correct.

Non-RUPs: When Your Facility Applies Pesticides.

For pesticides that are not restricted use (non-RUPs), you may purchase, store, apply, and dispose of these pesticides. Your selection of pesticide(s) should be based on the type of pests or weeds to be controlled, and the most environmentally sound applications. Best management practices (BMPs) for pesticide application include selecting pesticides with low mobility or toxicity to protect both humans and the environment, and use of pesticides that target individual pests or weeds. Alternatives should be considered when selecting a pesticide such

Selecting Pesticides. *Your local agricultural extension office can provide guidance when selecting the most appropriate pesticide to use. In addition, pesticide labels provide detailed information as to the appropriate use of a pesticide.*

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as those that require the minimum amount of active ingredient to be applied to control a problem. See *Federal Register* notice 58 FR 26856.

Pesticide Storage. EPA has published guidelines for safe storage of pesticides and EPA may place storage conditions on a pesticide's label.

Application or Use of Pesticides. FIFRA requires that every pesticide be registered and labeled with both the appropriate application methods and the appropriate amounts to be used in a particular application. Pesticide application includes mixing and application of the pesticide. It is a violation of FIFRA to apply a pesticide in a manner inconsistent with its label. Therefore, carefully read the label of any pesticide used and use only the amounts specified by the label. To minimize potential environmental impacts, the minimum application rate that is effective should always be used. Section 2(ee) of FIFRA does allow for some variances to the label requirements.

Inventory: You should plan and order only the amounts of pesticides needed at the time of application. Manufactures may allow you to return unused or unopened products.

Mixing should be conducted at a mixing site where structures exist to contain any spills. Check with your state before constructing pesticide mixing or loading sites to learn about state requirements affecting the location or placement of such a site.

Post-Application Clean Up and Pesticide Disposal. After pesticides are used, application equipment must be cleaned and empty containers disposed of. Consistent with the EPA label, some pesticide containers may be disposed of in municipal solid waste landfills; other containers may be disposed of in a licensed landfill or incinerator. The rinse water from clean up, if not reused, may be considered hazardous and should be disposed of accordingly. Disposal of **unused** pesticide product depends on the type of pesticide and EPA requirements on the label, such as incineration in a pesticide incinerator or other special treatment, or encapsulation and disposal at a properly licensed facility. EPA has proposed special requirements for the disposal of recalled or canceled pesticides under FIFRA Section 19, *Pesticide Management and Disposal*, 58 FR 26856, May 5, 1993. EPA expects to finalize these requirements in the Fall 1998.

Be sure to ask your disposal facility if they are licensed to accept the type of pesticide wastes you are disposing.

Pesticide Use/Applicator Training. As noted above, certain pesticides are classified by the EPA as restricted use (RUPs) based on toxicity or environmental hazard. These pesticides may be applied only by a licensed certified applicator. EPA sponsors a Pesticide Applicator Training Program that is administered by the states, primarily through local agricultural extension offices. Contact your local extension office to receive training in pesticide application to become a licensed certified applicator.

Pesticide **worker protection standards** (WPSs) promulgated by EPA require that pesticide workers receive training in the proper application of pesticides within five days of entering an area where pesticides are being applied. EPA does not require right-of-way workers to comply with the WPS. However, it is good practice for employees working with pesticides to receive training to ensure that pesticides are applied properly.

Recordkeeping. Best management practices (BMPs) for pesticides include keeping accurate records of inventory, use, and storage for the following purposes: tracking when the next application should occur in accordance with label directions; managing inventory; responding in the event of an accidental spill or fire; and alerting emergency responders of stored pesticides.

10.3.2 Food Quality Protection Act

The Food Quality Protection Act (FQPA) of 1996 was a comprehensive overhaul of the laws that regulate pesticides in food: FIFRA and the Federal Food, Drug and Cosmetics Act (FFDCA). The new law amends both major pesticide laws to establish a more consistent, protective regulatory scheme.

EPA's Role. EPA plays a role under both of these statutes in regulating pesticides:

- C Under FIFRA, EPA registers pesticides for use in the United States and prescribes labeling and other regulatory requirements to prevent unreasonable adverse effects on human health or the environment.
- C Under the FFDCA, EPA establishes tolerances (maximum legally permissible levels) for pesticide residues in food. Tolerances are enforced by the U.S. Department of Health and Human Services (USDHHS)/FDA for most foods, and by the USDA/FSIS for meat, poultry, and some egg products.

Changes from FQPA. The FQPA made many revisions to the way pesticides are regulated:

Under the FFDCA, the new law establishes a health-based safety standard for pesticide residues in food; requires an explicit determination that tolerances are safe for children; sets limitations on benefits considerations; requires tolerance reevaluation; incorporates provisions for endocrine testing; includes enhanced enforcement of pesticide residue standards by allowing the FDA to impose civil penalties for tolerance violations; requires distribution of a brochure in grocery stores on the health effects of pesticides, how to avoid risks, and which foods have tolerances for pesticide residues based on benefits considerations; and does not allow states to set tolerance levels that differ from national levels unless the state petitions EPA for an exception, based on state-specific situations.

Under FIFRA, the new law requires tolerances to be reassessed as part of the reregistration program; requires EPA to periodically review pesticide registrations to ensure that all pesticides meet updated safety standards; expedites review of safer pesticides to help them reach the market sooner and replace older and potentially more risky chemicals; establishes minor use programs within EPA and USDA to foster coordination on minor use regulations and policy; and establishes new requirements to expedite the review and registration of antimicrobial pesticides. While some of these changes under the FQPA do not affect you directly as a regulated entity, it is to your benefit to be aware of these changes in the regulations affecting pesticides residues.

Note: The FQPA changed the jurisdiction of some antimicrobial products from FIFRA to the FQPA.

Environmental Stewardship. You should also be aware that there are opportunities for environmental stewardship. EPA's Pesticide Environmental Stewardship Program (PESP) is a voluntary program dedicated to protecting human health and the environment by reducing both the use of pesticides and the risks associated with pesticide use. Current partners include agricultural producers as well as non-agricultural interests. Partners in PESP volunteer to develop and implement a well-designed pesticide management plan that will result in the safest and most effective way to use pesticides. In turn, EPA provides a liaison to assist the partner in developing comprehensive, achievable goals. Liaisons act as customer service representatives for EPA, providing the partner with access to information and personnel. EPA also will attempt to integrate the partners' stewardship plans into its agricultural policies and programs. For more information, call the PESP Hotline at 1-800-972-7717 or access the PESP webpage at <http://es.epa.gov.partners/pest/pest.html/>.

10.4 Toxic Substances Control Act

Under TSCA, EPA collects data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk, and the standards may apply at any point during a chemical's life cycle. Some food processing may be subject to the TSCA Chemical Inventory Update (see below) based on the type and quantity of substances they manufacture. Facilities may also be subject to requirements for asbestos, CFCs, and PCBs.

Regulated Substances under TSCA. You should be aware that drugs, cosmetics, foods, food additives, pesticides, and nuclear materials are **exempt from TSCA** and are subject to control under other federal statutes (e.g., foods and food additives are under the purview of the Federal Food, Drug and Cosmetics Act (FFDCA) administered by the FDA. In order for a food or food additive to be exempt, however, it must meet the definition contained in the FFDCA (21 USC 321 et seq.), or related statutes such as the Poultry Products Inspection Act and the Federal Meat Inspection Act. If the food or food additive does not meet the definition, the substance may then be regulated under TSCA and is subject to all the requirements of TSCA including testing, premanufacture notice, reporting and recordkeeping, export notification, and import certification. For example, vegetable oils and their derivatives from vegetable processing that are used as an ingredient in lubricants, paints, inks, fuels, plastics, solvents and a variety of other industrial products are subject to all of TSCA's requirements.

TSCA Chemical Inventory Update Reporting. Under TSCA Section (8)(a), manufacturers and importers of certain chemical substances are required to report the specific chemical identity and quantity, and site of manufacture or importation of these substances every four years. This is known as the *TSCA Chemical Inventory Update*; and the next four-year reporting period begins in August 1998 and ends in December 1998.

If you are manufacturing substances, such as vegetable oil and animal fats, that are used for non-food purposes (e.g., in inks), you must comply with requirements of the Inventory Update. Certain exemptions are available to small manufacturers under 40 CFR 710.28. EPA uses this information to update its *TSCA Chemical Substances Inventory* database. EPA relies on the accuracy of this data to monitor and estimate health and safety risks to people and the

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environment as well as to formulate control and preventive responses. Note: Other EPA programs may develop site-specific information on public and environmental risks as needed. EPA also incorporates reported information into its regulatory decision-making process to assure responsive and effective regulation of the chemical industry.

To determine your reporting obligations, you must make two determinations for each substance that you manufacture in the United States or import into the United States:

- (1) Is the substance reportable under the Inventory Update Rule? If you do not already know whether a substance you manufacture or import is on the Inventory, you should consult a copy of the latest version of the inventory. To obtain a copy (at a cost), call the Superintendent of Document, Government Printing Office at (202) 783-3238, or call the TSCA Assistance Information Service at 202-554-1404.
- (2) Are you a manufacturer, importer, or exporter who is required to report that substance? Generally, if you manufacture or import 10,000 lbs or more of a reportable substance at any single site during the fiscal year preceding the reporting period, you are required to report. Small manufacturers are usually exempt from the reporting under the Inventory Update Rule; however, there are some conditions under which they must report.

There are requirements for when and how to report the information for the Inventory Update Rule. There are also recordkeeping requirements. You must maintain records that document the information contained in your submissions. Required records include those that show the production volume, plant site, and site-limited status of each substance reported. These records must be kept for four years after the effective date of the applicable reporting period.

If you are manufacturing or importing a chemical substance that is not already on the inventory (and has not been excluded by TSCA), you must submit a premanufacture notice (PMN) prior to manufacture or importation (40 CFR 720). The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemical's effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA also can restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Reporting and Recordkeeping Requirements. Section 8 of TSCA authorizes EPA to require chemical manufacturers, importers, and processors to keep records and report certain information. TSCA Section 12 requires the submission to EPA of certain information about chemical exports, while Section 13 requires the submission of certification statements concerning import shipments of chemical substances. These additional requirements under TSCA are summarized below:

- **Alleged Significant Adverse Reactions.** Under TSCA Section 8(c), if you manufacture, import, process, or distribute chemical substances or mixtures in commerce, you are required to keep files of allegations of significant adverse reactions and provide this information to EPA upon request.

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- **Health and Safety Studies Submission.** Under TSCA Section 8(d), if you manufacture, import, process, or propose to manufacture, import, process listed chemicals, you are required to submit lists or copies of unpublished studies to EPA.
- **Substantial Risk Reporting.** Under TSCA Section 8(e), if you manufacture, import, process, or distribute a chemical substance or mixture and obtain “new” information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment, you are required to report such information to EPA within 15 days.
- **Exports.** Under TSCA Section 12, if you export chemicals subject to final and certain proposed rules and orders under TSCA Sections 4, 5, 6 and 7, you are required to notify EPA of the country of destination the first time a chemical is shipped to that country during a calendar year.
- **Imports.** Under TSCA Section 13, if you import chemical substances, you are required to certify that each shipment is in compliance with TSCA or is not subject to TSCA.

Asbestos, CFCs, and PCBs. There may be other substances, including asbestos, CFCs, and PCBs, at your food processing facility which are regulated under Section 6 of TSCA. Because these substances pose unreasonable risks, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on these substances (40 CFR 750). If you have these substances onsite, you should check with your EPA and/or state regulatory agencies for information on federal and/or state requirements for these substances. For additional assistance, contact the TSCA Assistance Information Service at 202-554-1404.

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11. POLLUTION PREVENTION TECHNIQUES

11.1 Introduction

Pollution prevention (P2) is a simple idea: it means you eliminate pollution **before it is created** at your food processing facility rather than controlling the pollution from your processes and then treating and disposing of the wastes that you generate. P2 techniques that food processing facilities can use range from placing catch pans near equipment hydraulic lifts to making fundamental changes in the way food is cleaned and prepared. This section discusses the benefits and incentives, costs of compliance, and techniques that may work at your facility. **Keep in mind that all P2 activities should be carried out in accordance with food safety requirements of the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA).**

The U.S. Environmental Protection Agency (EPA) defines P2 as the use of materials, processes, or practices that reduce or eliminate the generation of pollutants or waste at the source. The direct benefits of P2 are:

- Decreased waste management costs
- Decreased input materials costs and energy consumption
- Decreased environmental compliance costs
- Decreased liability
- Increased compliance
- Increased worker safety
- Improved corporate image.

What will these benefits mean to your food processing facility?

- **Reduction in the cost of operating your food processing facility**

The creation of waste that impacts the water, land, or air, and the use of certain chemicals, translates into additional dollars you must spend. When you generate waste, your operating costs increase since you must pay for items, such as hazardous waste disposal, the installation and operation of pollution control equipment, and permit fees. By reducing wastestreams, you can cut the cost of operating your facility. And these cost savings should translate to **lower operating costs and increased profits.**

- **A more efficient and productive business**

In order to maintain compliance with environmental regulations, you and your staff must conduct a great number of environmental management activities. These activities cost your facility time and money. More often than not, these costs are hidden in your facility's overhead. The more waste you generate, the more your facility is regulated. So, if you spend less time on compliance activities because you have less waste to manage, your facility will have more time to process foods.

- **Reduced Risk of Liability**

You will decrease your risk of liability by reducing the volume and the potential toxicity of the vapor, liquid, and solid discharges you generate. As a food processing facility, you should look at all types of waste, not just those that are currently defined as hazardous (see Section 8.0 *How Do I Comply With the Hazardous Waste Regulations?* for a definition of hazardous waste). Since toxicity definitions and regulations change, reducing volumes of wastes in all categories is a sound long-term management policy.

- **Prevent pollution**

If there are fewer hazardous materials at your food processing facility, your compliance obligations will be fewer. If your workers are exposed less frequently to hazardous materials, their health and safety will not be as much at risk. In addition, you will not have to be concerned about their well being -- or your liability. Furthermore, the environment will be cleaner and you will be prepared for a regulatory agency's inspection.

Successful implementation of pollution prevention techniques can reduce worker exposure and liability.

11.2 What Pollution Prevention Techniques Can I Use?

This section presents an overview of P2 techniques that can be incorporated into your major process activities (e.g., storage, receiving and preparation, processing and filling, packaging, and storage and distribution), as well as your ancillary operations (e.g., refrigeration, cleaning, maintenance, and laboratory activities). The techniques shown in *Table 11-1 Overview of Pollution Prevention Techniques* provide a general overview of several of the options available to you.

Section 11.3 Pollution Prevention Techniques for the Food Processing Industry presents detailed descriptions of each P2 technique. It is important to remember that not every P2 technique will work at every food processing facility. You should compare and evaluate these P2 techniques to identify those that may help you meet your P2 goals. You will then need to try a select few to determine what works in your facility, but does not compromise the quality and safety of your product. *Consultation with the agencies regulating food safety is critical during the planning and evaluation of any pollution prevention technique(s) that you may adopt.*

Some P2 techniques will assist you in reducing your fresh water use and wastewater generation. This will result in cost savings to your facility and decreased demands on the POTW to process your wastewater.

As shown in Table 11-1, there are many different kinds of P2 techniques. These techniques can be divided into categories, including process or equipment modification (primarily involving utilizing water conservation methods); operational and housekeeping changes; recycling/reuse; and material substitution and elimination. For the purposes of this document, each technique is placed under one of these categories. However, you may categorize a particular technique

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Table 11-1. Overview of Pollution Prevention Techniques

Type of P2 Technique	Technique	Process or Ancillary Activity	Ease of Implementation
Process/ equipment modification	Replacing traditional faucets	Receiving and preparation	Easy - Moderate
	Dry caustic peeling of fruits and vegetables	Receiving and preparation	Difficult
	Water shutoff during breaks	Processing and filling	Easy
	Water control units	Processing and filling	Moderate
	Installing flow meters	Processing and filling	Easy
	Exterior area water use reduction	Storage and distribution	Easy
Operational and housekeeping changes	Placing catch pans under potential overflows/leaks	Storage	Easy
	Covering outside storage areas	Storage	Easy
	Inspections and preventive maintenance of potential discharge areas	Storage	Easy
	Secondary containment	Storage	Easy - Moderate
	Monitor liquid fill machines	Processing and filling	Easy - Moderate
	Covering outside drains during loading and unloading	Storage and distribution	Easy
	Covering inside floor drains (in non-production areas only)	Maintenance	Easy
	Cleaning prevention	Cleaning	Easy - Difficult
	Precleaning and dry cleanup	Cleaning	Moderate
	Skim grease traps regularly	Cleaning	Easy
	Screening	Cleaning	Moderate
	Minimizing pests	Cleaning	Easy - Moderate
Recycling/reuse	Countercurrent washes	Processing and filling	Moderate
	Process water reuse	Processing and filling	Easy - Moderate
	Water recirculation units	Processing and filling	Moderate
	Water used to chill products	Processing and filling	Moderate
	Residuals management	Processing and filling, storage and distribution	Easy - Moderate
	Recycling refrigerants	Refrigeration	Moderate
	Reducing/recycling/reusing packaging	Processing and filling	Easy - Moderate

Table 11-1. Overview of Pollution Prevention Techniques

Type of P2 Technique	Technique	Process or Ancillary Activity	Ease of Implementation
Material substitution and elimination	Laboratory inventory reduction	Laboratory	Easy
	General inventory control	Purchasing	Easy
	Using alternative refrigerants	Refrigeration	Moderate

differently for your operation. The table also indicates the ease of implementation of each technique. While some P2 techniques are easy; others are more challenging. However, they all involve changes in how you do business. When you understand how much it costs to comply with all the regulations that apply to your facility, you will see that changing your operations makes good business sense.

11.3 Pollution Prevention Techniques for the Food Processing Industry

This section describes P2 opportunities that could be implemented at your facility. Information on whether the technique is easy or more difficult to use is included next to each listing, followed by a description of the technique. The ease of implementation can be determined by many factors, such as cost, adding new equipment, substituting materials, and if necessary, making associated process changes. **Food processors should evaluate these P2 techniques before use to assure they do not compromise the safety of their product.**

11.3.1 Techniques for Process/Equipment Modification

Replacing Traditional Faucets

Easy- Moderate

As a food processing facility, you have probably found that traditional faucets can be one of the highest water users in your facility. Traditional faucets are often large water users because they have a high flow rate, and they can be left on while unattended, sometimes for hours at a time. By replacing the faucets with modified flow faucets, flow rates can be reduced by over 80%. By retrofitting faucets with on-demand foot or knee control devices or automatic shutoff nozzles, flow can be reduced even further. An example of such savings is presented below.

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At a Kentucky Poultry plant¹, 44 faucets were replaced and upgraded leading to an annual savings of \$37,174. The plant's cost of installing 44 restricted flow faucets was \$1,100 at \$25 per faucet. The new faucets had flow rates of 0.5 gpm compared to 1.5 - 3.5 gpm for the old faucets. The change reduced the process line's flow rate by 83.5 gpm (from 87.5 gpm to 4 gpm). Total savings were calculated as follows:

$83.5 \text{ gpm} \times 60 \text{ min/hr} \times 16 \text{ hr/day (work day)} \times 265 \text{ days/yr (operating days)} = 21,424,400 \text{ gal/yr} \times \$1.75/1,000 \text{ gal} = \mathbf{\$37,174/yr \text{ savings}}$

$\$37,174/yr / 265 \text{ days/yr} = \$101.85/day$
 $\$1,100(\text{total cost}) / 101.85/day = \mathbf{11 \text{ day payback period.}}$

Note: An additional step for water conservation can be the use of automatic shutoff valves which can stop sprays when conveyor belts stop.

Dry Caustic Peeling of Fruits and Vegetables Difficult

As a food processing facility, you may have problems with high levels of product residue in the water generated during the steam peeling process. In conventional steam peeling operations, potato peels may contribute up to 80 percent of the total plant wastewater biochemical oxygen demand (BOD). However, peeling processes can be modified so that the peel waste can be removed without using excessive amounts of water. One option is the "dry" caustic peeling process.

In a dry caustic system, peels are softened by caustic, and then a machine uses very thin soft rubber discs to remove the peels. These rubber disks are placed on rotating cylindrical rolls arranged in a circular revolving cage containing a feed screen through the center. The feed rate is controlled by the central screw conveyor. A final rinse to remove the last traces of peel and caustic is the only fresh water used.

Table 11-2 Comparison of the Average Liquid Effluent for Caustic and Dry Peeling Operations presents a comparison of effluent from conventional caustic and dry caustic peeling operations, based on a demonstration of peach peeling at a canning facility.

¹ U.S. Environmental Protection Agency. Climate Wise - Economic and Environmental Impact Case Studies: Food Processing. "Case Study: Waste Reduction Opportunity Assessment. Seaboard Kentucky Poultry Processing Facility. Hickory, Kentucky. February 1994."

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Table 11-2. Comparison of the Average Liquid Effluent for Caustic and Dry Peeling Operations (Del Monte Demonstration Project)¹

Wastewater Characteristics	Conventional Caustic Peeling	Dry Caustic Peeling
Water Usage	850 gallons/ton ²	90 gallons/ton
COD	10.8 (1500 ppm)	4.2 (5600 ppm)
BOD	6.7 (940 ppm)	2.8 (3700 ppm)
Suspended Solids	5.6 (790 ppm)	1.9 (2500 ppm)
Total Solids	17.8 (2500 ppm)	4.0 (5300 ppm)
pH range	6-9	4-6

¹ Carawan, Roy et al., "Spinoff On Fruit and Vegetable Water and Wastewater Management," presented in *Industrial Water Conservation References of Food Processing*, California Department of Water Resources, 1989.

² Assumes countercurrent rinse. Without countercurrent rinse, this number could be as high as 2,000 gallons per ton for peaches.

Water Shutoff During Breaks

Easy

If your food processing facility does not have on demand faucets and hoses, water shut off during breaks can save thousands of dollars each year, without any capital investment. For example, shutting off water during breaks at the Kentucky poultry plant discussed earlier saved \$23,964 per year. Based on its previous water use of 344.5 gpm during breaks, its savings were calculated as:

$$344.5 \text{ gpm} \times 60 \text{ min/hr} \times 2.5 \text{ hr/day (break time)} \times 265 \text{ day/yr} = \mathbf{13,693,875 \text{ gal/yr}}$$
$$13,693,875 \text{ gal/yr} \times \$1.75/1,000 \text{ gal} = \mathbf{\$23,964/yr}.$$

Water Control Units

Moderate

Your food processing facility may provide a continuous flow of fresh water for the raw product prior to and during preparation, or you may require continuous replenishment of a wash bath for each new batch of product. A water control unit can be added to the automatic process to reduce fresh water use. Wall-mounted control units, which control the flow and temperature of the water to the wash bath, can be installed. A water control unit costs approximately \$1,200. The benefits of this technique are in the cost savings which can be realized from decreased fresh water use and reduced wastewater discharge.



Installing flow meters

Easy

When combined with education and training, flow meters can help all employees become involved in your facility's water reduction program. Food processing facilities have found that flow meters allow them to measure and monitor water use on a constant basis. This technique is especially useful in cooking operations, where any excess water that enters the process is excess water that is heated. Thus by preventing excess water from entering the process, you can save energy costs of heating excess water. Flow meters allow all employees to monitor water use and help reduce water usage on a facility-wide basis.

Exterior Area Water Use Reduction

Easy

In addition to the pollution prevention techniques directly related to your production process, you have additional opportunities to reduce water usage. By educating all employees about the costs of water use and the benefits of reduction, your facilities can maximize cost savings. Some options for reducing non process-related water use include:

- T Wash vehicles used outside the facility less often (Vehicles used inside the facility must be washed after use for safety.) 40 CFR
- T Recycle wastewater from vehicle washing. (Your facility may want to evaluate technologies to recycle this wastewater.)
- T Design and maintain landscapes requiring less water

- T Reduce irrigation water use by:
 - Installing timers on sprinkler systems
 - Watering in the early morning or evening when evaporation is lowest
 - Making sure irrigation equipment applies water uniformly
 - Installing drip irrigation systems
 - Using rain sensors.

11.3.2 Techniques for Operational and Housekeeping Changes

The following section describes P2 techniques that pertain to minimizing or eliminating wastes during waste segregation, separation, and preparation processes.

Placing Catch Pans Under Potential Overflows/Leaks

Easy

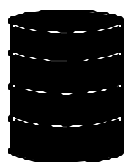
Placing catch pans or other mini-containment devices near hydraulic lifts, liquid drum storage or dry product storage areas at your food processing facility is an excellent technique to:

- (1) Prevent waste from entering drains
- (2) Reduce the use of cleanup materials
- (3) Reduce wet washing.

While product that hits the ground is generally disposed of as waste or washed down drains, spilled product caught by catch pans can be recycled as animal feed. Catch pans located in a food production area must be cleared regularly and should be removed from the production area for cleaning.

Cover Outside Storage Areas

Easy



Covering outside storage areas such as waste containers, product storage bins, or cleaning chemical containers is a relatively easy pollution prevention technique that you can implement at your facility. This technique can reduce contaminants in storm water discharges, and help you comply with the Best Management Practice requirements in your facility's storm water permit.

Simple methods of coverage include:

- Moving chemicals inside the plant
- Covering containers with a waterproof tarp when not in use
- Replacing old dumpster covers with new watertight covers
- Replacing or repairing leaking dumpsters.

A pollution prevention technique of moderate expense is to construct an aluminum panel roof under which waste containers, product storage bins, or chemical containers can be stored.

Inspections and Preventive Maintenance of Potential Discharge Areas

Easy

You may find that routine inspections uncover potential problems before they lead to water discharges. Preventive maintenance of outdoor processes can prevent discharges, thus reducing the need for cleanup water and subsequently reducing discharges to storm sewers.

Secondary Containment

Easy - Moderate

Both outdoor and indoor storage facilities should be equipped with secondary containment, which is any device or structure that prevents a spill or leak from reaching the environment. One of the most effective secondary containment methods that can be used in an outdoor storage area is a concrete or asphalt pad surrounded by a berm or curb. The pad and berm prevent any spilled or leaked material from coming in contact with the soil. If a berm is not available, sandbags, or absorbent socks around the perimeter of the area will provide some containment for a short period of time after a spill. Within buildings, depending on construction of the building, the walls and floor provide secondary containment for preventing spills or releases. One of the least expensive secondary containment devices consists of a metal tray covered by a metal grate, which can be used for 55-gallon drums and smaller containers. The container sits on top of the metal grate so that any material or waste that is

released from the container simply falls through the grate and is collected by the metal tray underneath. The tray must be large enough to hold the entire volume of the container and should be protected from rainfall.

Monitor Liquid Fill Machines

Easy - Moderate

Ensure liquid fill machines operate correctly and do not overfill cans, jars, etc. Overfill will end up on the floor and be washed down the drain, thereby increasing BOD levels in wastewater. Ways to eliminate overfills include changing the speed at which the machine is operated, adding sensors, and ensuring that the containers flow smoothly through the machine (eliminating jarring movements which could cause spillage).

Cover Outside Drains During Loading and Unloading

Easy

Covering outside drains during loading processes at your food processing facility can prevent spills from reaching storm or process water drains with minimal costs. Preventing spills from entering the wastewater system has several benefits including:

- Preventing potential unauthorized discharges to storm drains
- Preventing high pollutant concentration discharges to treatment plants
- Allowing for a dry precleaning prior to washing a spill area.

Covering Inside Floor Drains (In Non-production Areas Only)

Easy

As with outside drains, covering floor drains can prevent spills from adding pollutants to wastewater. ***This should be done only in areas where food is not handled.*** Covering drains prevents spills and leaks from flowing directly to the wastewater system. This method provides additional benefits for your facility such as:

- Encouraging dry cleanup by making it more difficult to wash spills down the drains
- Reducing/eliminating non-emergency use and replacement costs of spill equipment (e.g., booms, drying materials) used to prevent spills from reaching floor drains.

Cleaning Prevention

Easy - Difficult

The best way to reduce water use for cleaning spills is to avoid the need for cleaning. Preventing spills from reaching the floor reduces or eliminates water in cleanup. Conducting regular inspections of storage areas and potential spill sites (machines, ovens, conveyors) can prevent spills from occurring, and thus from reaching the wastewater system. Dedicating mixing lines to specific products can reduce changeover cleanups. However, implementation of these lines may be difficult and expensive.

Precleaning and Dry Cleanup

Moderate

For equipment or machinery cleaning, cleaning techniques that reduce water use can save money on water and sewer charges. Techniques such as using squeegees or other dry cleaning equipment prior to wash down, followed by initial rinses with recycled water, have the benefit of allowing you to reduce the time and volume of water in final cleaning. The most important phase of precleaning, however, is dry cleanup.

Dry cleaning is a relatively simple process that involves removing a spill or spent product before washing a surface or container. Many food processing facilities have found dry cleanup to be an easy low cost alternative to hosing spills or unusable product down the drain. They have found that dry cleanup can significantly reduce BOD loading in wastewater discharges, reduce onsite treatment, and reduce the frequency of screen cleaning. When done thoroughly, dry cleanup can prevent all but waste residuals from reaching your facility's wastewater system.



To most effectively conduct dry cleanup, it is important to consider the following:

- All dry wastes should be protected and kept dry to prevent water from contacting the waste, or from entering the drains directly.
- Employees should remove food waste and debris from the production areas and associated equipment with dry methods before using water.
- Solids should be collected from the floor and machines by sweeping and vacuuming into a sanitary container which is kept out of the production area when not in use.
- A stiff broom which is kept sanitized and is cleaned regularly should be used to sweep materials off the floor; scraping and then brushing may be the only effective way to recover some materials from under equipment.
- To allow reuse, clean and store dry cleanup tools and utensils separate from regular wet cleanup gear and in a manner that will not jeopardize the safety of your product.
- Water hoses should be used only as a final alternative to a cleaning task. Any materials on the floor should be removed prior to hose down or wash down.

Dry cleaning can also be used as part of regular washdowns. When emptying cooking ovens or tanks, wastewater pollutants can be reduced by:

- Emptying waste products into barrels instead of pumping down the drain
- Emptying machines by hand rather than hoses.

Skim Grease Traps Regularly

Easy

Skimming grease traps regularly reduces the amount of contaminants entering wastewater. Many facilities hire outside contractors to remove contaminants from grease traps on a periodic basis. For most effective use, however, more frequent skimming as part of regular housekeeping not only ensures that discharged wastewater has reduced contaminants, but also improves your ability to recycle and reuse process waters before discharge.

Screening

Moderate

Placing screens in all drains is an easy pollution prevention technique to collect and prevent solids from entering the wastewater stream. Screening can reduce BOD and solids levels in wastewater, reducing loads on your treatment plant. However, screening should be done only with food safety in mind. Screens need to be cleaned regularly to prevent residue buildup and must be removed from the production area to be cleaned. Cleaning must be done in a sanitary fashion.

Minimizing Pests

Easy - Moderate

When you generate waste, your operating costs increase since you must pay for items, such as hazardous waste disposal which includes waste pesticide, herbicide, and insecticide disposal. By reducing these wastestreams, you can cut the cost of operating your facility. In order to maintain compliance with waste pesticide disposal regulations, you and your staff must conduct a great number of environmental management activities. Instead, your facility can reduce the amount of pesticides, herbicides, and insecticides used at your facility "by design."

Pest prevention by design is the engineering science which will help reduce the need for chemical control of rodents, insects, birds and other vermin. This involves landscape design, building design or remodeling and equipment layout and design. For example, short grass, neatly trimmed shrubs, paved access ways and proper drainage reduce or eliminate shelter areas for pests. Rodents are further discouraged by surrounding the building foundation with an 18 to 24 inch strip of 1/8 inch pebbled rock in a trench approximately 4 inches deep. This makes an excellent area for traps and bait stations.

Other pest control P2 techniques include:

- Eliminating improperly stored equipment, litter, waste, refuse, and uncut weeds or grass within the immediate vicinity of plant buildings or structures to reduce pest harborages.
- Properly sloping, and adequately draining the grounds to avoid contamination of food products through seepage or foot-borne filth. Poor drainage provides a breeding place for insects and microorganisms.
- Positioning outside lighting and focusing it away from buildings to attract night flying insects away from doors and windows.
- Reducing potential bird harborages by screening off harborage areas.
- Eliminating food that may accumulate near malfunctioning exhaust systems.

- Considering various types of rodent, insect, and bird traps. Trapped protected birds must be released.
- Maintaining adequate housekeeping programs.

11.3.3 Techniques for Recycling/Reuse

While reducing the input materials to your food processing operations is the most effective means of pollution prevention, recycling/reusing materials in your operations can be an equally effective way of reducing your solid wastestream. Try using returnable materials containers (**except for food contact materials**) and returnable plastic or wood pallets. Check with your suppliers for other suggestions on how you can recycle/reuse materials that end up in your trash bin. Examples of pollution prevention that involve reduction in waste cleanup that also could be considered methods of recycling are summarized below.



Countercurrent Washes

Moderate

Commonly used in food processing, countercurrent washing can replace parallel tank systems. Countercurrent systems are multistage (tank) systems in which water gets reused in preceding steps. In a three-stage countercurrent wash system, water from the third (final) stage is reused as make-up water for the second stage. Clean water is then used to replenish the final stage. Water from the second stage is reused as make-up water for the first stage. Water from the first stage, which is the dirtiest, is commonly discarded. The countercurrent washing system requires more space and equipment. The benefits of this technique are that it reduces the volume of fresh water used and reduces the volume of wastewater generated. Compared to a non-countercurrent rinse system, this method can reduce water usage by over 50%.

Process Water Reuse

Easy-moderate

Your food processing facility can reuse process water in several applications without compromising food safety. Be sure you comply with all FDA and USDA regulations regarding water reuse. Generally process water that has not been filtered or treated can be used as a first rinse in wash cycles, or for primary cleaning of floors and gutters.

Examples of potential sources of water to be reused include final rinses from tank cleaning; refrigeration defrost; cooler effluent, and sterilizer effluent. Potential opportunities for water reuse include as boiler makeup and caustic dilution.

Water Recirculation Units

Moderate

Water recirculation units can be installed to reuse food processing wash water. The benefits of this technology are that it reduces fresh water use, wastewater discharge, and energy consumption. "Off-the-shelf" units (1) reduce fresh water use because wash bath water is reclaimed and reused and (2) reduce energy use associated with heating the washwater baths. Reclaimed water is already warm so less energy is required to heat it to the required

temperature. Filters from the water recirculation units require disposal and are generally considered nonhazardous solid wastes. **Food companies which contemplate installing water recirculation units should consult and comply with all appropriate FDA/USDA regulations concerning such a practice.**

The costs associated with installing water recirculation units vary between food processing facilities. Capital expenditures are required for:

- T The water recirculation unit (a minimum of \$500);
- T Replumbing of the washwater bath system; and
- T Ongoing operation and maintenance.

Water Used to Chill Products

Moderate

When recycling and recirculating water used to chill products, **it is important that the water meets FDA and/or USDA standards.** The FDA specifies that any water that contacts foods or food-contact surfaces shall be safe and of adequate sanitary quality. This standard applies to non-meat and non-poultry processing operations and allows for water to be recycled. (Water is recycled through a product cooler, which contains either a refrigerated chiller or a cooling tower to continuously cool the water between cycles.) For these operations, cooling water can be used for initial product washing; however, final washing must be conducted with potable water.

USDA is responsible for meat and poultry processing operations, and has identified three acceptable processes for prechiller water recycling:

- C Ozonation in a countercurrent flow contact column
- C Screening, ozonation, sand filtration, and ozonation
- C Screening, diatomaceous earth (DE) filtration and ozonation.

You will find that any of these processes can significantly improve water quality, reducing solids from between 28% (ozonation alone) and 65% (screen and filtration processes), and COD between 38% and 87%. In addition, these processes have reduced microbial loads by more than 99.9%.

An example of the significant savings you can achieve by recirculating chiller water is provided by the North Carolina Agricultural Extension Service.



If a food processing facility uses 120,000 gallons of water daily to chill its products, it could save 96,000 gallons daily by reconditioning 80% of its waste chiller water. At \$1.90 per thousand gallons for water and sewer charges, this plant could save more than 24,000,000 gallons of water valued at more than \$45,000 per year. In addition, COD and TSS loads in the effluents could also be reduced by approximately 200,000 lb/yr (assuming an initial average of 1,000 mg/L of COD and TSS, respectively, in the untreated chiller water).

If the surcharge on excess COD is \$0.20/lb, the surcharge savings could be almost \$40,000 per year. Thus the potential savings for water, sewer,

and surcharges could total as much as \$85,000 per year. Other savings might be realized through by-product recovery and reductions in energy costs.²

Residuals Management

Easy - Moderate

Residues are defined as solid by-products that have some positive value or represent no cost for disposal. Food processing residues typically have nutrient/organic matter content that makes them economically recyclable. Some of the more recent technologies for reclaiming by-products for utilization include (1) recovering by-products for use in human food; (2) recovering by-products for animal feeds; (3) use as fertilizers for crop production; and (4) recovery for energy generation.

Recycling Refrigerants

Moderate

If refrigerants are recycled or reclaimed, they are not considered hazardous under federal law. As a food processing facility, recycling or reclaiming your refrigerants will reduce your hazardous waste disposal costs. If you have not done so already, it is important that you consider recycling your refrigerant or contracting a service to reclaim used refrigerant. To assist owners of commercial refrigeration, EPA has published a series of short fact sheets that outline regulations and pollution prevention techniques. For further information, call the Stratospheric Ozone Hotline at 1-800-296-1996.

Reducing/Recycling/Reusing Packaging

Easy

Many businesses across the U.S. generate extremely large amounts of nonhazardous solid waste daily. Much of the waste is from product packaging (e.g., plastic, cardboard, and aluminum). Incinerators and landfills, most often, are the final destination for most of this waste. There are, however, many avenues for diverting the solid waste from a solid waste disposal facility. Inefficiently managed solid waste can lead to excessive and unnecessary expenses for your facility. The following list provides several suggestions and resources to help you better handle your facility's solid waste.

- **Reduce Materials Used.** You can reduce or eliminate a number of input materials to reduce solid wastes generated by your facility. These materials include excess cardboard and plastic packaging.
- **Reuse Materials.** While reducing the input materials to your packaging process is the most effective means of pollution prevention, reusing materials in your operations can be an equally effective way of reducing your solid waste stream. Using returnable materials such as plastic crates or wooden pallets will reduce the amount of waste that ends up in the trash. ***Use of returnable materials for food contact should be avoided.***

² North Carolina Agricultural Cooperative Extension Service. "Bank or Drain: Cut Waste to Reduce Surcharges for Your Dairy Plant." North Carolina Pollution Prevention Pays Program. CD-26. March 1996 (JWM). <http://www.bae.ncsu.edu/baeprogams/extension/publicat/wqwm/cd26.html>

- **Recycle Scrap.** Many materials in the packaging process can be recycled, which will prevent them from ending up in the local landfill. They include paper, empty containers, cardboard, pallets, glass, and aluminum. Consult your vendors or local recycling companies for more ideas.

11.3.4 Techniques for Material Substitution and Elimination

As a food processing facility, you should research materials that are safe for the environment (without compromising the safety and quality of your product) and cost less (e.g., by weight or usage amount) that you can use in food processing operations. If it is determined that a material is not needed for a process, eliminate its usage to reduce extra costs in production. By educating all employees about the costs of waste disposal and the benefits of reduction, you can maximize cost savings by implementing pollution prevention techniques throughout your facility.

Laboratory Inventory Reduction Easy

Keeping laboratory materials to a minimum can benefit your facility by reducing accumulation of unusable chemicals and preservatives. It can also provide incentives to minimize use where possible.

General Inventory Control Easy

Ordering of Materials. Minimize wastes by ordering quantities of materials that match your needs. When ordering input materials, avoid overstocking by ordering according to usage demands. A good unit price is meaningless if the material goes bad on your shelf and you then have to dispose of it. Buy the largest container that allows you to use all of the contents before they go bad. This minimizes solid waste from packaging.

Inventory Control. Chemical containers labels list the shelf life for the material. You should follow these dates and keep inventories using first-in, first-out practices, which will help you reduce the amount of materials with expired shelf lives.

Using Alternative Refrigerants Moderate

Your facility should consider using alternative refrigerants for your equipment. Many new alternative refrigerants are being marketed for use in stationary refrigeration equipment. You should ask your refrigerant supplier if an alternative is available and whether it is on EPA's Significant New Alternatives Policy (SNAP) program list. EPA's SNAP program determines what risks alternatives to refrigerants pose to human health and the environment. EPA evaluates the alternative refrigerant's ozone-depleting potential, global warming potential, flammability, and toxicity. The SNAP evaluation, however, does not determine whether the alternative will provide adequate performance or will be compatible with the components of a refrigeration system. ***Food processors should consult with their refrigeration supplier/engineer prior to considering a SNAP refrigerant to ensure that safe temperature parameters for their product will not be compromised.*** To assist owners

of commercial refrigeration, EPA has published a series of short fact sheets that outline regulations and pollution prevention techniques. For further information, call the Stratospheric Ozone Hotline at 1-800-296-1996.

11.4 Voluntary Programs

Over the last several years, an important change has been taking place in EPA's national strategy for protecting the environment. Through an array of partnership programs that EPA collectively refer to as *Partners for the Environment*, EPA is demonstrating that voluntary goals and commitments achieve real environmental results in a timely and cost-effective way. In addition to traditional approaches to environmental protection, EPA is building cooperative partnerships with a variety of groups, including small and large businesses, citizen groups, state and local governments, universities and trade associations.

The results of the *Partners for the Environment* effort are impressive. Thousands of organizations are working cooperatively with EPA to set and reach environmental goals such as conserving water and energy, and reducing greenhouse gases, toxic emissions, solid wastes, indoor air pollution and pesticide risk. EPA's partners are making pollution prevention a central consideration in doing business. Partnership also means that EPA is working cooperatively with the private sector to provide stakeholders with effective tools to address environmental issues. And these partners are achieving measurable environmental results often more quickly and with lower costs than would be the case with regulatory approaches. EPA views these partnership efforts as key to the future success of environmental protection.

EPA's voluntary pollution prevention programs, such as the Environmental Leadership Program (ELP), Project XL, and WasteWi\$e, are designed to promote industrial environmental excellence. Some programs offer opportunities for both trade association and individual companies to participate. As of 1996, trade associations representing the food processing industry and/or individual companies were participating in most of these voluntary programs. Several federally sponsored demonstration programs (e.g., Climate Wise, Green Lights, and NICE³) focus on energy savings in industrial operations. Although energy use is not regulated, energy conservation and pollution prevention are interrelated. As of 1996, a small number of food processing companies were participating in these programs.

EPA has produced a reference guide that describes 38 of its voluntary pollution prevention programs, entitled "Partnerships in Prevention Pollution: A Catalogue of the Agency's Partnership Programs" (1996). This document can be accessed at <http://www.epa.gov/partners/>.

11.4.1 EPA Programs

Environmental Leadership Program

From 1994 to 1996, EPA's Office of Compliance tested a national initiative, the Environmental Leadership Program (ELP), with twelve industrial facilities (e.g. printing, waste management services, etc.) and federal installations. Note: No food processing facilities participated in the pilot phase of this initiative.

The program provided recognition and certain other benefits to facilities that demonstrated strong commitments to continued compliance and "beyond compliance" efforts. Two of the criteria for participation were that the facility had to have a good record of compliance with environmental laws, regulations and permits, and the facility had to demonstrate it had an environmental management system (EMS) that met ELP requirements. EPA is reviewing the ELP's results before further action on this program. For additional information, visit the ELP Home Page at <http://es.epa.gov/elp/>.

Project XL

Project XL was initiated in March 1995 as a part of President Clinton's *Reinventing Environmental Regulation* initiative. Project XL, which stands for "eXcellence and Leadership," is a national initiative that tests innovative ways of achieving better and more cost-effective public health and environmental protection. The information and lessons learned from Project XL will be used to assist EPA in redesigning its current regulatory and policy-setting approaches. Project XL encourages testing of cleaner, cheaper, and smarter ways to attain environmental results superior to those achieved under current regulations and policies, in conjunction with greater accountability to stakeholders.

EPA and program participants will negotiate and sign a Final Project Agreement, detailing specific objectives that the participant (regulated entity) shall satisfy. In exchange, EPA will allow the participant a certain degree of regulatory flexibility and may seek changes in underlying regulations or statutes. Participants are encouraged to seek stakeholder support from local governments, businesses, and environmental groups. EPA hopes to implement fifty pilot projects in four categories including facilities, sectors, communities, and government agencies regulated by EPA. Applications will be accepted on a rolling basis and projects will move to implementation within six months of their selection.

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JACK M. BERRY INC. Jack M. Berry Inc. is a mid-sized juice-processing facility in LaBelle, Florida.

Innovative Approach: Jack M. Berry Inc. is developing a facility-wide comprehensive operating plan that consolidates environmental permits and all operating procedures into a single manual for the facility. The project builds in stakeholder participation, and will be evaluated with appropriate public notices every five years. The project may be consolidating seven Federal, State, and local environmental permits by developing and gaining approval for just one comprehensive operating permit instead of many each year. It is also improving compliance with environmental requirements by involving staff in the development of the facility-wide operating plan and by using simple language to describe more clearly what is required by law.

Benefits for the Environment: In the first year of the project, the facility eliminated several hazardous wastestreams, and an 88-acre area previously used to disperse wastewater, which relieved the community of irritating odor problems. The facility is also expected to: (1) reduce air emissions of volatile organic compounds, sulfur dioxide, and nitrogen oxides; and (2) further reduce the number and types of solvents and lubricants used onsite and replace them with a number of environmentally-friendly materials.

Benefits to the Facility: Jack M. Berry Inc. will save significant expenditures by eliminating the costly requirement of preparing multiple permit applications every few years. This results in reduced lender concern about future operational status, which, in turn, can translate into lower interest rates for long-term loans. In addition, as a result of audits during the project's first year, the company's new work procedures are expected to result in 50 percent savings in environmental control investments, improved worker safety, and substantially reduced employee training costs.

Stakeholder Involvement: Jack M. Berry Inc. has been working to ensure that those parties with a stake in the environmental concepts of its project are informed and have had an opportunity to participate in the development of the project.

As of March 1998, more than 50 proposals have been reviewed to date. Seven pilot projects, including Jack M. Berry Inc. of Labelle, Florida (see box below), have signed final project agreements and are being implemented, and twenty proposals are in the development stage. More information on the Jack M. Berry pilot project can be found at http://yosemite.epa.gov/xl/xl_home.nsf/all/berry.html.

For additional information on Project XL, including application procedures and criteria, see the April 23, 1997 Federal Register Notice, call the Project XL Information Line at (703) 934-3239, or use the Project XL fax-on-demand line at (202) 260-8590. Additional information can be obtained from EPA's fact sheet entitled, "What Is Project XL? Excellence and Leadership in Environmental Protection" (EPA 231-F-97-001), March 1998, and other project-specific fact sheets, all of which are available on the Internet at http://yosemite.epa.gov/xl/xl_home.nsf/all/homepage/ or via Project XL's fax-on-demand line.

WasteWi\$e Program

The WasteWi\$e Program was started in 1994 by EPA's Office of Solid Waste and Emergency Response. The program is aimed at reducing municipal solid wastes by promoting waste minimization, recycling collection, and the manufacturing and purchase of

recycled products. As of January 1998, the program had about 700 partners spanning more than 35 industry sectors. Partners include large corporations, as well as small and medium-sized businesses. WasteWi\$e has 59 endorsers, mainly membership-based organizations, from more than 15 industry sectors. Partners agree to identify and implement actions to reduce their solid wastes and must provide EPA with their waste reduction goals along with yearly progress reports. EPA, in turn, provides technical assistance to partner companies and allows the use of the WasteWi\$e logo for promotional purposes. For more information, contact the WasteWi\$e Hotline at 800-EPA-WISE (372-9473) or access the WasteWi\$e Home Page via the Internet at <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise>.

Climate Wise

Climate Wise, a unique, government-industry partnership jointly sponsored by the U.S. Department of Energy (DOE) and EPA, helps businesses turn energy efficiency and environmental performance into a corporate asset. Climate Wise, a voluntary program, was designed to help the United States honor its international commitment to reducing greenhouse gas emissions to 1990 levels by the year 2000. Climate change prevention measures can continue to be a prime focus of international negotiations in the future.

Companies participating in Climate Wise are finding that improving energy efficiency and reducing greenhouse gas emissions save them money and boost productivity. Climate Wise Companies already expect to save more than \$300 million by the year 2000. Becoming a partner is easy. To join, companies must complete a one-page partnership agreement; submit a Climate Wise Action Plan within six months that identifies specific cost-effective energy efficiency and pollution prevention measures; and report results annually while striving for continuous improvement. In return, participants in the Climate Wise program receive DOE and EPA help in identifying actions that both save energy and reduce costs. For example, Climate Wise partners receive an innovative action plan development software program that provides more than 50 case studies, a list of proven energy efficiency technologies, and tools to quantify the results of their actions. Also, Climate Wise companies can receive access to free pollution prevention and energy efficiency assessments. In addition, companies receive public recognition for their efforts.

Over 300 current partners have taken advantage of the program's many service offerings, including financial information sources, supporting documents, and peer exchange opportunities. For more information, call 202-260-4407 or access the ClimateWi\$e Home Page via the Internet at <http://www.epa.gov/climatewise/>.

Green Lights Program

Green Lights is an innovative, voluntary pollution prevention program sponsored by EPA. The primary purpose of the Green Lights Program is to encourage U.S. organizations to install energy-efficient lighting, in order to prevent the creation of air pollution (including greenhouse gases, acid rain emissions, air toxics, and tropospheric ozone), solid waste, and other environmental impacts of electricity generation. As of April 1998, the program had over 2,500 members which included major corporations; small and medium sized businesses; federal,

state and local governments; non-profit groups; schools; universities; and health care facilities.

By joining Green Lights, partners agree to install energy efficient lighting where profitable as long as lighting quality is maintained or improved. EPA agrees that your commitment to survey buildings and complete lighting upgrades is contingent upon the availability of appropriated funds or third-party financing resources. EPA provides technical assistance to the participants through a decision support software package, workshops and manuals, and a financing registry. EPA's Office of Air and Radiation is responsible for operating the Green Lights Program. For additional information, contact Green Light/Energy Star Hotline at 202-775-6650 or call toll-free at (888) STAR-YES (782-7937)]. Information can also be accessed using the fax-back system at 202-564-9659 or by accessing the Green Lights Home Page via the Internet at <http://www.epa.gov/greenlights.html>.

NICE³

The U.S. Department of Energy (DOE) and EPA's Office of Pollution Prevention are jointly administering a grant program called The National Industrial Competitiveness through Energy, Environment, and Economics (NICE³). By providing grants of up to 50 percent of the total project cost, the program encourages industry to reduce industrial waste at its source and become more energy-efficient and cost-competitive through waste minimization efforts. Grants are used by industry to design, test, demonstrate, and assess the feasibility of new processes and/or equipment with the potential to reduce pollution and increase energy efficiency. The program is open to all industries; however, priority is given to proposals from participants in the pulp and paper, chemicals, primary metals, and petroleum and coal products sectors. For more information, contact DOE's Golden Field Office at 303-275-4729 or access <http://www.oit.doe.gov/Access/nice3/basicbody.html>.

11.4.2 Trade Association/Industry Programs

Trade associations and other industry-related groups are developing programs that promote pollution prevention opportunities. The following are examples of these programs developed for the food processing industry.

Food Manufacturing Coalition for Innovation and Technology Transfer

Initiated on January 23, 1996, the Food Manufacturing Coalition (FMC) is an ongoing, industry-driven technology transfer program. The objectives of the FMC are to (1) improve the food manufacturing industry's productivity and environmental quality through technological innovation and commercialization, and (2) address and solve high priority, industry-wide environmental problems. The program is open to companies of all sizes.

Members of the FMC discussed and selected specific high priority areas initially identified through surveys conducted by 8 national trade associations partnering in the project. A total of 20 potential projects directed toward maximizing air and water quality, minimizing solid waste and toward increased control and processing efficiencies were designated for further analysis and effort. These topic areas were further refined into detailed needs statements that are being broadly disseminated to the research and development community asking for technical ideas and interest in joint efforts. The needs and suggested technological approaches will result in State-of-the Art reports that document alternative technologies available for follow-up in the form of co-development, licensing, Small Business Innovation Research Grants, or other strategies leading to potential commercialization.

For more information on the FMC program, contact R.J. Phillips & Associates, Inc. at (703) 406-0072 or send e-mail to rphil1140@aol.com. Additional information can also be obtained by accessing the FMC webpage at <http://ceres.esusda.gov/fmc/>.

Communicating CAA Section 112 (r) Risk Management Program Requirements

The Food Industry Environmental Council (FIEC) a coalition of more than 50 food processors and trade associations, has developed materials to assist food processors in communicating with the public about risk management programs covered under the CAA Section 112(r). These communication materials include the following:

- C "Backgrounders" on ammonia, chlorine and propane;
- C A computer disk with the shell of a tri-fold brochure and filler language;
- C Communication guidelines;
- C A question and answer document; and
- C A resource and reference document.

The communication packages are available from your food trade association.

APPENDIX A

SUMMARY OF MAJOR REGULATIONS FROM THE CFR

The following contains brief summaries of the major environmental regulations from the *Code of Federal Regulations* (CFR) that are applicable to food processors. Table A-1 shows the regulations and the CFR citations that are presented in Appendices A.1-A.6. These summaries can assist you in identifying specific regulatory requirements. Appendix A.7 lists pending and proposed regulations. You should note that these materials are intended solely as guidance. Because applicable regulations are specific to each individual facility, you should use the *Federal Register* or the CFR to determine your facility's requirements.

Table A-1. Regulations and CFR Citations Presented in Appendix A

Appendix	Statute	Regulation	
A.1	CWA	NPDES Permit Program	40 CFR 122
		Pretreatment Regulations	40 CFR 403
		Discharge of Oil	40 CFR 110
		Oil Pollution Prevention	40 CFR 112
		Designation of Hazardous Substances	40 CFR 116
		Determination of RQs for Hazardous Substances	40 CFR 117
A.2	SDWA	National Primary Drinking Water Regulation	40 CFR 141
		National Secondary Drinking Water Regulation	40 CFR 143
		Underground Injection Control Program	40 CFR 144
A.3	CAA	Subpart M National Emission Standards for Asbestos	40 CFR 61
		Chemical Accident Prevention Provisions	40 CFR 68
		Protection of Stratospheric Ozone	40 CFR 82
A.4	EPCRA	Emergency Planning and Notification	40 CFR 355
		Hazardous Chemical Reporting	40 CFR 370
		Toxic Chemical Release Reporting	40 CFR 372

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Table A-1. Regulations and CFR Citations Presented in Appendix A

Appendix	Statute	Regulation	
A.5	CERCLA	Designation, Reportable Quantities and Notification	40 CFR 302
A.6	RCRA	Generator Classifications and Requirements	40 CFR 261.5 & 262.34
		Hazardous Waste Generator Requirements	40 CFR 262
		Hazardous Waste Transporter Requirements	40 CFR 263
		Land Disposal Restrictions	40 CFR 268
		Underground Storage Tanks (USTs)	40 CFR 280
	FIFRA	Not summarized in this document.	
	TSCA	Not summarized in this document.	

APPENDIX A. I

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE CLEAN WATER ACT

The following section provides a summary of the principal regulations developed pursuant to the CWA that are applicable to the food processing industry. The regulations included are:

- **40 CFR 122** - NPDES Permit Program
- **40 CFR 403** - Pretreatment Regulations
- **40 CFR 110** - Discharge of Oil
- **40 CFR 112** - Oil Pollution Prevention
- **40 CFR 116** - Designation of Hazardous Substances
- **40 CFR 117** - Determination of Reportable Quantities for Hazardous Substances

40 CFR 122

EPA Administered Permit Programs, The National Pollutant Discharge Elimination System

Definition of a Point Source (40 CFR 122.2): For the purposes of the CWA, **point source** means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill, leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.

40 CFR 122 - DIRECT DISCHARGES	
Requirements	Compliance Dates
<p>Discharge Limitations:</p> <ul style="list-style-type: none">• Effluent limitations contained in the NPDES permit. <p>Monitoring and Reporting Requirements:</p> <p>Note: All direct dischargers are required to obtain an NPDES permit. The NPDES permit outlines the discharger's specific monitoring and reporting requirements.</p>	<p>Compliance with specific permit limitations upon effective date of the permit.</p>

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40 CFR 122 - DIRECT DISCHARGES	
Requirements	Compliance Dates
<ul style="list-style-type: none"> • <u>Permit Applications</u> - containing the information required under 122.21(f), (g), and (k) (application requirements for new sources and new discharges) 	<p>Permit applications are to be submitted 180 days prior to the commencement of discharge. Applications for permit renewal are required to be submitted 180 days before the existing permit expires.</p>
<ul style="list-style-type: none"> • <u>Planned Changes</u> - notification to the Director as soon as possible of any planned physical alteration or addition that meets the criteria in 122.41(l)(1) 	<p>As soon as possible, when applicable</p>
<ul style="list-style-type: none"> • <u>Anticipated Noncompliance</u> - advance notification to the Director of any planned changes that may result in permit noncompliance 	<p>In advance of changes, when needed</p>
<ul style="list-style-type: none"> • <u>Monitoring Reports</u> - monitoring results must be submitted as required by the NPDES permit (at least annually). All monitoring must be conducted using 40 CFR 136 methods. 	<p>At least annually or more frequently as required by permit</p>
<ul style="list-style-type: none"> • <u>Compliance Schedules</u> - reports of compliance or noncompliance with compliance schedule requirements 	<p>Within 14 days of each compliance schedule date</p>
<ul style="list-style-type: none"> • <u>24-Hour Reporting</u> - of any noncompliance that may endanger health or the environment, including the information listed in 122.41(l)(6) 	<p>Within 24 hours</p>
<ul style="list-style-type: none"> • <u>Anticipated and Unanticipated Bypass</u> - notification as required under 122.41(m) 	<p>At least 10 days prior to anticipated bypass. Within 24 hours of unanticipated bypass</p>
<ul style="list-style-type: none"> • <u>Discharge of Toxic Pollutants</u> - notification to the Director of activity that results in the discharge of toxic pollutants not limited in the permit, if it exceeds the levels outlined in 122.42(a)(1) 	<p>As soon as facility knows or has reason to believe that levels will be exceeded</p>
<ul style="list-style-type: none"> • <u>Storm Water Permit Applications</u> - submission of either individual permit application or general permit applications <ul style="list-style-type: none"> - Individual permit applications must include the information in 122.26(c)(1) 	<p>Individual permit applications for existing facilities were due October 1, 1992. New facilities must submit an application 180 days prior to commencement of industrial activity</p>

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40 CFR 122 - DIRECT DISCHARGES	
Requirements	Compliance Dates
<ul style="list-style-type: none"> - Facilities to be covered under a baseline general permit must file a Notice of Intent (NOI) 	<p>NOIs from existing facilities were due prior to October 1, 1992. NOIs were due prior to September 9, 1997 in order to be covered under the administratively-extended baseline general permit.</p>
<ul style="list-style-type: none"> - Facilities to be covered under a multi-sector general permit must file a NOI. • <u>Other Storm Water Reports</u> - submission of other reports as required under a facility's storm water discharge permit. These reports may include pollution prevention plans and monitoring reports. <p>Recordkeeping Requirements:</p> <ul style="list-style-type: none"> • Records of monitoring information as required under 122.41(j) must be kept for at least three years. 	<p>Deadlines for NOIs differed for facilities in operation prior to September 29, 1995, and those who commenced operations after September 29, 1995.</p> <p>Due dates as required by permits</p>

40 CFR 403 General Pretreatment Regulations for Existing and New Sources of Pollution

40 CFR 403 - INDIRECT DISCHARGES	
Requirements	Compliance Dates
<p>Discharge limitations:</p> <ul style="list-style-type: none"> • Prohibited discharge standards (general and specific) in 40 CFR 403.5 • Applicable local limits 	
<p>Monitoring and Reporting Requirements:</p> <p>Note: Reports must be submitted whether or not the facility has been issued a permit.</p>	

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40 CFR 403 - INDIRECT DISCHARGES	
<ul style="list-style-type: none"> • <u>Baseline Monitoring Reports (BMR)</u> - containing the information required under 40 CFR 403.12(b). • <u>Compliance Schedule Progress Reports</u> - containing the information required under 40 CFR 403.12(c)(3) 	<p>BMRs from existing sources are due within 180 days after the effective date of a categorical pretreatment standard. BMRs from new sources are due 90 days prior to commencement of discharge.</p> <p>Due within 14 days of completing compliance schedule milestone or due date</p>
<ul style="list-style-type: none"> • <u>90-Day Compliance Report</u> - containing the information required under 40 CFR 403.12(d) • <u>Periodic Reports on Continued Compliance</u> - containing the information in 40 CFR 403.12(e) (including monitoring data for all categorically regulated pollutants). All monitoring must be conducted using 40 CFR 136 methods. • <u>Notice of Potential Problems Including Slug Loadings</u> • <u>Notice of Changed Discharge</u> - advanced notification of any substantial change in the volume or character of pollutants in the discharge (including hazardous wastes) • <u>Notice of Violations and Resampling</u> - notification of violation and results of sampling • <u>Notification of Hazardous Waste Discharge</u> - notification to the POTW, EPA, and the state of the hazardous wastes discharged to the POTW 	<p>Due within 90 days following date for final compliance or for new sources, following the commencement of introduction of wastewater to the POTW</p> <p>Must be submitted at least semiannually</p> <p>Immediately to the Control Authority upon identification of discharges that could cause problems to the POTW</p> <p>Prompt notification in advance of any substantial change</p> <p>Notice within 24 hours, results of resampling within 30 days</p> <p>One time notification, unless changes to discharge</p>
<p>Recordkeeping Requirements:</p> <ul style="list-style-type: none"> • Monitoring records including the information listed in 403.12(o) must be maintained for at least 3 years 	

40 CFR 110

Discharge of Oil

Applicability:

Prohibited discharges include certain discharges to U.S. navigable water, adjoining shorelines, or to waters of the contiguous zone, occurring in connection with activities under the Outer Continental Shelf Lands Act of the Deepwater Port Act, or those that may affect U.S. natural resources.

May be applicable to food processing facilities using oil and that are either located by a municipal storm sewer that discharges to waters or near streams or bodies of water.

40 CFR 110	
Requirements	
<ul style="list-style-type: none">• Discharge of oil is prohibited that:<ul style="list-style-type: none">- Violates applicable water quality standards, or- Causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines• Notification must be provided immediately to the National Response Center at 1-800-424-8802 or 202-426-2675 in the Washington, DC metropolitan area of any discharge of oil in violation of the Section 311(b)(3).	Immediately

40 CFR 112

Oil Pollution Prevention

Applicability:

Non-transportation related onshore and off-shore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil and oil products that could reasonably discharge oil in harmful quantities, as defined in 40 CFR 110.

Note: 40 CFR 112 does not apply to facilities, equipment, or operations which are not subject to EPA jurisdiction.

40 CFR 112	
Requirements	Compliance Dates
<p>Prepare and implement Spill Prevention Control and Countermeasure plans meeting the requirements of 40 CFR 112.3 - 112.7</p> <ul style="list-style-type: none"> • Submit report as described in 40 CFR 112.4 when discharged oil > 1,000 gallons in single spill event or discharged oil in harmful quantities in two spill events • Review, evaluate, and update plan as required under 40 CFR 112.5 • Submit facility response plan as described in 40 CFR 112.20 and develop and implement facility response training and drill exercise as described in 40 CFR 112.21 	<p>Existing sources: Plans in effect New sources: Prepare plan within 6 months of beginning operation and fully implement in no later than 1 year</p> <p>Within 60 days of becoming subject to reporting requirements</p> <p>Review plan once every 3 years, amend plan within 6 months, if needed</p> <p>Existing sources: as described in 40 CFR 112.20 New source: Prior to start of operations</p>

Additional requirements not addressed here include facility response plans, preparedness drills and exercises, and training.

40 CFR 116 and 117 Designation of Hazardous Substance and 40 CFR 117 Determination of Reportable Quantities for Hazardous Substances

Applicability:

40 CFR 117 does not apply to facilities that discharge the substance under an NPDES permit or to a POTW, as long as any applicable effluent limit or pretreatment standard is met.

Requirements:

40 CFR 116.4 designates hazardous substances and 40 CFR 117.3 establishes the Reportable Quantity (RQ) for each substance listed in 40 CFR 116. When an amount equal to or in excess of the RQ is discharged, the facility must provide notice to the Federal government following DOT requirements in 33 CFR 153.203.

APPENDIX A.2

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE SAFE DRINKING WATER ACT

The following section provides a summary of the principal regulations developed pursuant to the SDWA that may apply to the food processing industry:

- **40 CFR 141** - National Primary Drinking Water Regulations
- **40 CFR 143** - National Secondary Drinking Water Regulations
- **40 CFR 144** - Underground Injection Control Program.

40 CFR 141

National Primary Drinking Water Regulations

Applicable Subparts:

Public water systems (PWSs) applicable to food processing facilities includes:

- Community water system - A PWS which serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents.
- Non-transient non-community water system - A PWS that is not a community water system and that regularly serves at least 25 of the same persons for over 6 months of the year.

40 CFR 141	
Requirements	
Maximum Containment Levels - Subparts B, G	All Regulations in effect
Maximum Containment Level Goals - Subpart F	
Monitoring and Analytical Requirements - Subparts C, H, I	
Reporting, Public Notification and Recordkeeping - Subparts D, H, I	
Surface Water Treatment Rule - Subpart H	Under development

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Recordkeeping Requirements (40 CFR 141.33, 144.75, 141.80 and 141.91)

Records Pertaining to	
Bacteriological analyses	At least 5 years
Chemical analyses	At least 10 years
Actions taken to correct violations	At least 3 years after last action taken
Sanitary survey reports	At least 10 years
Variations or exemptions	At least 5 years following expiration
Lead and copper control	At least 12 years

Lab Reports Summary Requirements (40 CFR 141.33, 141.74 and 141.80)

Sampling Information	
Date, place, and time of sampling	Date of analysis
Name of sample collector	Laboratory conducting analysis
Identification of sample:	Name of person responsible for analysis
<ul style="list-style-type: none"> • Routine or check sample • Raw or treated water 	Analytical method used
	Analysis results

Reporting Requirements for Check Sampling

Contaminant	
Microbiological	Must report to state within 48 hours when any check sample confirms the presence of coliform bacteria.
Nitrate	Must report to state within 24 hours if check sampling confirms MCL has been exceeded
All others	Must be reported to the state within 10 days after the end of the month in which the sample was received.

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MCL Violations

Contaminant	Violation
Inorganic chemicals (except nitrate) and organic chemicals (except THMs)	If average of results from initial sample plus 3 check samples exceeds MCL
Nitrate	If average of results from initial sample plus the check sample exceeds MCL
THMs	If average of results from present quarter plus those of 3 preceding quarters exceeds MCL*
Radionuclides (natural and man-made)	If average annual concentration exceeds MCL**
Microbiological (coliform testing): membrane filter and multiple-tube fermentation	If any of the MCLs are exceeded

* Quarter means a 3-month period. For convenience, calendar quarters are used.

** Based on individual analyses of 4 consecutive quarterly samples or a single analysis of an annual composite of 4 quarterly samples.

Public Notification Requirements, 40 CFR 141.32

Violation or Condition	Required Timing			
	72 Hours	14 Days	45 Days	3 Months
Violation of an MCL, acute	3, 4, 5	2, 4, 5	1, 4, 5	1, 4, 5
Violation of an MCL, non-acute		2, 4, 5	1, 4, 5	1, 4, 5
Failure to monitor; failure to follow compliance schedule; or failure to use approved testing procedure				2, 4, 5
System granted a variance or exemption				1, 4, 5

1 - Direct mail
4 - Hand delivery

2 - Local newspaper
5 - Continuous posting in conspicuous places

3 - By local radio and/or TV

40 CFR 143

National Secondary Drinking Water Regulations

Applicable Subparts:

These regulations are not Federally enforceable but are intended as guidelines for States.

40 CFR 143	
Component	Regulatory Recommendation
Standards	Secondary MCLs exist for 15 contaminants
Monitoring	Conducted at least as frequently as the monitoring performed for inorganic chemicals listed in the National Interim Primary Drinking Water Regulations and more frequently for parameters such as pH, color, and odor
Analytical Methods	pH, copper, and fluoride should be analyzed consistent with methods described in 40 CFR 141. Other contaminants should be analyzed using the procedures specified in 40 CFR 143.4(b).
Notification	Community water systems that exceed the secondary MCL for fluoride, but do not exceed the primary MCL, should notify (using the public notice provided in 40 CFR 143.5(b)) all billing units annually, all new billing units at the time service begins, and the state public health officer.

40 CFR 144

Underground Injection Control Program

Applicable Subparts:

Well classifications applicable to food processing facilities:

- Class I - Wells used to inject hazardous or nonhazardous wastes beneath the lowermost formation containing, within one-quarter mile of the well-bore, an underground source of drinking water.
- Class V - Injection wells not included in other classes.

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40 CFR 144	
Requirements	
<p>Any underground injection is prohibited unless authorized by permit or rule. Construction of any well required to have a permit is prohibited until the permit has been issued.</p> <p>Authorization by Rule Requirements:</p> <p>Reporting Requirements:</p> <ul style="list-style-type: none"> • Inventory information as specified in 40 CFR 144.26 • 24-hour notification of noncompliance that may endanger health or the environment (Class I wells) as required in 40 CFR 144.28(b) • Plugging and abandonment plan (Class I wells) as required in 40 CFR 144.28(c). • Reports containing the information required in 40 CFR 144.28(h)(l) (Class I wells) • Notice of abandonment as required in 40 CFR 144.28(j) • Plugging and abandonment report as required in 40 CFR 144.28(k) 	<p>One year after the date of approval or effective date of the UIC program for the State.</p> <p>Orally within 24 hours and written five days</p> <p>One year after the effective date of the UIC program in the State (EPA administered programs)</p> <p>Quarterly</p> <p>As specified by the Director</p> <p>Existing wells: No later than 4 years from approval or promulgation of UIC program.</p> <p>New wells: Reasonable time before construction is expected to begin</p>
<p>Authorization by Permit</p> <p>Monitoring requirements:</p> <ul style="list-style-type: none"> • All owners and operators (even those authorized by rule, unless authorized for life of the well) are required to submit a permit application containing the information in 40 CFR 144.31. 	

APPENDIX A.3

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE CLEAN AIR ACT

The following sections provide summaries of some of the principal regulations developed pursuant to the CAA that may apply to the food processing industry. The section includes:

- **40 CFR 61** - Subpart M National Emission Standards for Asbestos
- **40 CFR 68** - Risk Management Planning
- **40 CFR 82** - Protection of Stratospheric Ozone

Additional requirements exist for boilers, NSPS, and NESHAP; see the regulations for more information.

40 CFR 61 - Subpart M

National Emission Standard for Asbestos

Standard for Demolition and Renovation 61.145
Standard for Spraying 61.146
Standard for Insulating Materials 61.148
Standard for Waste Disposal for Manufacturing,
Fabricating, Demolition, Renovation, and Spraying
Operations 61.150

Applicability:

- C 40 CFR 61.145 is applicable to owners or operators of a demolition or renovation activity
- C 40 CFR 61.146 is applicable to owners or operators of an operation in which asbestos-containing materials are spray applied.

Affected Processes:

- C For demolition, requirements in 40 CFR 61.145(b) and (c) apply if the combined amount of Regulated Asbestos-Containing Material (RACM) meets criteria listed in 40 CFR 61.145(a)(1)(i) or (ii).
- C For renovation, requirements in 40 CFR 61.145(b)(and (c)) apply if the combined amount of RACM to be stripped, removed, dislodged, cut, drilled, or disturbed meets the criteria in 61.145(4)(i) or (ii).
- C All RACM must be removed from a facility being demolished or renovated before any activity begins that would break up, dislodge, or disturb the material or preclude access to the material for removal.
- C When a facility component that contains, is covered with, or is coated with RACM is being taken out of the facility as a unit or in sections, the procedures in 40 CFR 61.145(c)(2) must be followed; and when RACM is stripped from a facility component while it remains in place at the facility, procedures in 40 CFR 61.145(c)(3) must be met.
- C After a facility component covered with, coated, with, or containing RACM is taken out of the facility, it must be handled according to the procedures in 40 CFR 61.145(c)(4). Large components such as reactor vessels, large tanks, and steam generators must be handled according to procedures in 40 CFR 61.145(c)(5).
- C All RACM must be handled according to procedures in 40 CFR 61.145(c)(6).
- C No RACM can be stripped, removed, or otherwise handled or disturbed at a facility unless at least one onsite representative is trained in compliance with the regulations.
- C Under 40 CFR 61.146, material that contains more than 1% asbestos cannot be used for spray application on buildings, structures, pipes, and conduits.
- C Under 40 CFR 61.148, no owner or operator may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying; and this does not apply to spray-applied insulating materials regulated under 40 CFR 61.146.
- C Under 40 CFR 61.150, each owner or operator of any source covered under 40 CFR 61.145 or 61.146 must:
 - Discharge no visible emissions to the outside air during the collection, processing, packaging, or transporting of any asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in 40 CFR 61.150(a)((1) through (4).
 - Dispose of all asbestos-containing waste material as soon as practical at sites as listed in 40 CFR 61.150(b).

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- Mark vehicles used to transport asbestos-containing waste material as in 40 CFR 61.150(c).

Exemptions:

- C If the facility is being demolished under State or local government order because the facility is structurally unsound or in danger of imminent collapse, only 40 CFR 61.145(b)(1), (b)(2), b(3)(iii), (b)(4) (except (b)(4)(viii)), (b)(5), and (c)(4) through (c)(9) of this section apply.
- C RACM does not need to be removed before demolition if it meets the criteria in 40 CFR 61.145(c)(1)(i), (ii), (iii), or (iv).
- C Spray-on application of materials is not subject to 40 CFR 61.146 when the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.
- C Owners and operators of sources subject to 40 CFR 61.146 are exempt from the requirements of 40 CFR 61.05(a), 61.07, and 61.09.
- C Requirements in 40 CFR 61.150(a) do not apply to demolition and renovation for Category I nonfriable ACM waste and Category II nonfriable ACM waste that did not become crumbled, pulverized, or reduced to powder.

Reporting and Recordkeeping Requirements

- C Owner or operator of demolition or renovation activity must submit and update written notice containing the information in 40 CFR 61.145(b)(4)(i) through (xvii).
- C Spray-on application of materials that contain more than 1% asbestos on equipment and machinery are subject to the notification and procedural requirements in 40 CFR 61.146(b)(1) and (2).
- C Waste shipment records must be maintained for all asbestos-containing waste as described in 40 CFR 61.150(d).

40 CFR 68

Risk Management Planning

Applicability:

Owners or operators of stationary sources that have more than a threshold quantity of a regulated substance in a process, as determined under 40 CFR 68.115.

Date of Applicability:

The latest of the following dates:

- June 21, 1999
- Three years after the date on which a regulated substance is first listed
- The date on which a regulated substance is first present above a threshold quantity.

Applicable Program:

A covered process is eligible under one of the three following programs. If at any time a covered process no longer meets the eligibility criteria of its Program level, the owner or operator shall comply with the requirements of the new Program level that applies and update the RMP.

Program 1 - For five years prior to submission of the RMP, the process has not had an accidental release of a regulated substance that led to death, injury, or response or restoration activities for exposure of an environmental receptor, and the distance to a toxic or flammable endpoint for a worst-case release assessment is less than the distance to any public receptor, and emergency response procedures have been coordinated between the stationary source and local emergency planning and response organizations.

Program 2 - A covered process not subject to Program 1 or Program 3

Program 3 - A covered process, not subject to Program 1 and either; the process is in SIC code 2611, 2812, 2819, 2821, 2865, 2869, 2873, 2879, or 2911, or, the process is subject to the OSHA process safety management standard 29 CFR 1910.119.

General Requirements:

- Implement a Risk Management Program that includes a hazard assessment, release prevention program, and emergency response program.
- Submit a Risk Management Plan with a registration that includes all covered processes.

Risk Management Plan Requirements:

- An executive summary describing elements of the RMP
- A single registration form covering all regulated substances
- Worst-case release scenario information
- Five-year accident history information
- Alternative release scenarios information (for Program 2 and 3 processes)
- Emergency response program information
- Certification statement
- Regular review and updates to the RMP
- Additional information for Programs 2 and 3.

Other Requirements:

- Maintain records for five years
- Information available to the public
- Additional permit requirements for facilities permitted pursuant to 40 CFR 70 or 71
- Provide access to implementing agency for RMP audits.

Additional Program 1 Requirements:

- Analyze worst-case release scenarios, document public receptor is beyond endpoint, and submit
- Complete five year accident history for the process and submit
- Ensure that response actions coordinated with local agencies
- Certify as specified in 40 CFR 68.12(b)(4).

Additional Program 2 Requirements:

- Develop and implement a management system, assigning a qualified person with the overall responsibility for the program
- Conduct a hazard assessment
- Implement a Program 2 Prevention Program
- Develop and implement an emergency response program
- Submit the data on prevention program elements for Program 2 processes.

Additional Program 3 Requirements:

- Develop and implement a management system, assigning a qualified person with the overall responsibility for the program
- Conduct a hazard assessment
- Implement a Program 3 Prevention Program
- Develop and implement an emergency response program
- Submit the data on prevention program elements for Program 3 processes.

40 CFR 82
 Protection of Stratospheric Ozone
 Subpart A: Production and Consumption Controls
 Subpart E: The Labeling of Products Using
 Ozone-Depleting Substances
 Subpart F: Recycling and Emissions Reduction

Applicability:

Any individual, corporate or government entity that produces, transforms, imports, or exports these controlled substances.

Note: The list below is not all inclusive of Title VI requirements affecting food processors.

40 CFR 82	
Requirements	Effective Date
<i>Subpart A: Production and Consumption Controls</i>	
Prohibition on the production and consumption of any Class I substance in annual quantities greater than the relevant percentage specified in the regulations (based on quantity of substance produced in the baseline year).	January 1 of each year specified in the regulations.
Prohibition on the production of all Class I substances.	1996 (except for methyl bromide - 2001)
Prohibition on the production of all Class II substances.	Begin in 2003 and end 2030
Reporting Requirements: Reports on production, imports, and exports of Class I and II substances.	Quarterly
<i>Subpart E: The Labeling of Products Using Ozone-Depleting Substances</i>	
Containers in which Class I and II refrigerants are stored or transported are required to be labeled with a warning stating that it contains a substance which harms public health and environment by destroying ozone in the upper atmosphere.	
<i>Subpart F: Recycling and Emissions Reduction</i>	
Prohibition on knowingly venting ozone-depleting compounds used as refrigerants into the atmosphere during maintenance, service, repair, or disposal or air-conditioning or refrigeration equipment.	July 1, 1992

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40 CFR 82	
<p>Technicians servicing air-conditioning and refrigeration equipment are required to evacuate refrigerant in the line according to prescribed guidelines.</p> <p>Recovery and/or recycling equipment must be tested by an EPA-approved third-party testing organization.</p>	<p>July 13, 1993</p> <p>All equipment sold after November 15, 1993. Some equipment manufactured prior to this date is grandfathered.</p>
<p>Require repair of substantial leaks in all air conditioning and refrigeration units with more than 50 pounds of refrigerant.</p>	<p>Within 30 days of recovery</p>
<p>All persons who maintain, service, repair, or dispose of appliances are required to be certified.</p> <p>Persons servicing or disposing of air-conditioning and refrigeration equipment are required to certify that certified recovery and recycling equipment has been acquired and they are complying with the applicable requirements of 40 CFR 82, Subpart F.</p>	<p>November 14, 1994</p> <p>August 12, 1993</p>

APPENDIX A.4

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (EPCRA)

The following sections provide a summary of the principal regulations developed pursuant to EPCRA that may apply to the food processing industry. The regulations included are:

- **40 CFR 355** - Emergency Planning and Notification
- **40 CFR 370** - Hazardous Chemical Reporting: Community Right-to-Know
- **40 CFR 372** - Toxic Chemical Release Reporting, Community Right-to-Know

40 CFR 355

Emergency Planning and Notification

Emergency Planning, 40 CFR 355.30

Requirements	
<p>Facilities subject to emergency planning requirements must notify the local emergency planning committee and State emergency response commission. They must designate an emergency planning coordinator and provide information to the local emergency planning committee.</p> <ul style="list-style-type: none">• 40 CFR 355.30(b) notification that the facility is subject to the planning requirements is due May 17, 1987 or within 60 days of becoming subject to the planning requirements• 40 CFR 355.30(c) facility emergency coordinator designated due September 17, 1987 or 30 days after a local emergency planning committee is established• 40 CFR 355.30(d) information for planning must be provided "promptly" upon request; notice of any relevant changes must also be provided.	<p>The facility has onsite an extremely hazardous substance equal to or greater than its threshold planning quantity. (The list of extremely hazardous substances and threshold planning quantities (TPQs) is in 40 CFR 355, Appendices A and B. Section 355.30(e) tells you how to calculate TPQs for solids and mixtures.)</p>

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Emergency Release Notification, 40 CFR 355.40

Requirements	Regulatory Threshold
<p>A facility must immediately notify the local community emergency coordinator (or emergency response personnel) of any area likely to be affected, and State emergency response commission of any State likely to be affected by a release. Notice must include chemical name or identity of any substance released, indication of whether it is an extremely hazardous substance, estimate of quantity released, estimate of time and duration of release, media into which release occurred, known or expected acute or chronic health risks including medical advice for exposed individuals, precautions to be taken, contact/phone numbers for further information. For transportation-related releases, this information can be provided to the 911 operator.</p> <p>A written follow up emergency notice must be provided to update the information about the release, and actions taken (not required for transportation-related releases).</p>	<p>The facility produces, uses, or stores a hazardous chemical and there is a release of a reportable quantity of any extremely hazardous substance or CERCLA hazardous substance. (Extremely hazardous substances and reportable quantities are in 40 CFR 355, Appendices A and B. CERCLA hazardous substances are in 40 CFR 302, Table 302.4.)</p>

40 CFR 370 Hazardous Chemical Reporting: Community Right-to-Know

General Applicability:

Any facility that is required to prepare or have available an MSDS for a hazardous chemical under OSHA (1970).

Reporting Requirements, 40 CFR 370.20

40 CFR 370 applies to any facility that has present at any time hazardous chemicals in an amount greater than or equal to 10,000 lbs or extremely hazardous substances in an amount greater than or equal to 500 pounds, or the Threshold Planning Quantity (TPQ), whichever is less. Such facilities must submit Tier I forms by March 1, 1991 and annually thereafter. If requested, they must also submit Tier II forms.

MSDS Reporting, 40 CFR 370.21

Subject facilities must submit to the local emergency planning committee (LEPC), state emergency response commission (SERC) and the local fire department (1) MSDSs for the facility for hazardous chemicals as required in 40 CFR 370.20; or (2) similar information including a list of hazardous chemicals by hazard category, the chemical or common name and components.

Reporting Upon Request, 40 CFR 370.21(d)

An MSDS must be provided within 30 days of receipt of the request by the LEPC.

Supplemental Reporting, 40 CFR 370.21(c)

An MSDS must be provided within 3 months of : (1) discovering new information on a chemical, (2) being required to have an MSDS for a chemical, or (3) the chemical being present above threshold.

Inventory Reporting, 40 CFR 370.25

The owner or operator must provide an inventory form to the emergency planning commission, the committee and the fire department with jurisdiction over the facility. It should contain Tier I information on hazardous chemicals present at the facility during the preceding calendar year above the threshold levels in 40 CFR 370.20(b). It must be submitted on or before March 1 each year. Tier II information may be submitted as an alternative per 40 CFR 370.25(b).

Submission of Tier II Information, 40 CFR 370.25(c)

Upon request by the committee, the facility must submit Tier II information.

Fire Department Inspection, 40 CFR 370.25(d)

The facility must allow the fire department to conduct inspections and must provide specific information on locations of chemicals upon request.

Mixtures, 40 CFR 370.28

The facility must report on mixtures and quantify its mixtures using procedures in 40 CFR 370.28.

Public Access and Availability of Information (Subpart C), 40 CFR 370.30

The committee must provide any person with MSDS or Tier II information for a specific facility, except that upon request by the facility owner or operator, the commission or committee can withhold information on the locations of chemicals identified on Tier II forms.

Tier I and Tier II Inventory Forms (Subpart D), 40 CFR 370.40

Subpart D contains the Tier I and Tier II forms that are used to report information on hazardous and extremely hazardous chemicals at the facility. (Some states have their own forms.)

40 CFR 372 Toxic Chemical Release Reporting, Community Right-to-Know

General Provisions - Subpart A Recordkeeping, 40 CFR 372.10

Applicability	
<p>Facilities must retain copies of reports, supporting documentation, data to show how reportable quantities were determined, data to calculate the quantity of a release, documentation of offsite transfer or release of toxic chemicals, manifests or records for offsite transfer for a period of 3 years after each report is made. The reports must be available for inspection by EPA.</p> <p>Date of applicability: January 1, 1987</p> <p>Threshold in 40 CFR 372.25(a) applies to chemicals manufactured, imported or processed at a facility. Since the 1989, the threshold is 25,000 lb/yr. Note: thresholds apply to individual chemicals over threshold levels, or to the combined totals of more than one chemical if the combined amount exceeds a threshold. Details are presented in 40 CFR 372.25(b)-(h).</p>	<p>All facilities where releases have been reported or where chemicals are manufactured, imported or processed at or above TPQs.</p>

Reporting Requirements, Subpart B

Requirements	Affected Facility
<p>This section of the regulations sets forth requirements for the submission of information relating to the release of toxic chemicals under Section 313 of EPCRA yearly on July 1.</p> <p>Date of applicability: January 16, 1988.</p>	<p>40 CFR 372.22 specifies types of facilities that are subject to the Form R reporting requirements:</p> <ul style="list-style-type: none"> a) facilities with more than 10 full-time employees, b) facilities in SIC codes 20-39 (as of January 1, 1987). Criteria for the determination of SIC codes are further explained in 40 CFR 372.22(b), and c) facilities that process, manufacture, or use a toxic chemical in excess of the threshold quantity set forth for the chemical in 40 CFR 372.30. <p>Exemptions to the reporting of releases of toxic chemicals are detailed in 40 CFR 372.28 (e.g., <i>de minimis</i> concentrations, toxic chemicals contained in articles, structural components, nonroutine janitorial uses, personal use by employees or for motor vehicles, chemicals in process water or noncontact cooling water, and laboratory activities). Owners of industrial parks or similar real estate owners are also exempt since the operators of the facilities would hold this responsibility.</p>

Reporting Requirements and Schedule for Reporting, 40 CFR 372.30

Applicability	
<p>EPA Form 9350-1 is to be used to report chemicals above thresholds for manufactured, imported, processed, used or combined into a mixture or trade name product. Details on characterizing mixtures and trade name products are given in 40 CFR 372.30(b).</p> <p>40 CFR 372.30(d) Reports are due annually on July 1 beginning in 1987. Additional specific data requirements for the years 1987, 1988, and 1989 are provided in 40 CFR 372.30(e).</p> <p>Chemicals above threshold planning quantities.</p>	<p>A regulated facility may consist of more than one establishment (defined as economic unit) and separate forms may be used for each establishment as long as reporting is accomplished for the entire facility.</p>

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Supplier Notification Requirement - Subpart C

Applicability	
<p>Facilities must notify the person to whom toxic chemicals, mixtures or trade name products containing toxic chemicals are sold. The notification must be in writing and include specific information per 40 CFR 372.45(b) (product trade name, a statement that the product contains a SARA Title III constituent, the CASE number of the chemical, and the % by weight of the toxic chemical).</p> <p>Notification must be with the first shipment of the product in each calendar year. If the product is renamed or changed, the notification must be initiated over again.</p>	<p>Owners and operators of facilities classified as SIC code 20-39 who manufacture, import or process toxic chemicals, and who sell or otherwise distribute a mixture or trade name product containing a toxic chemical to a facility who uses or sells the product or mixture. If an MSDS is required in accordance with 29 CFR 1919.1200, the notification must be attached or incorporated into the MSDS.</p> <p>Exceptions include mixtures or trade name chemicals with <i>de minimis</i> amounts (see 40 CFR 372.45(d) for others). However, if the chemical is considered proprietary (trade secret) under 29 CFR 1910.1200, the notification can be written with only generic language.</p>

Specific Toxic Chemical Listings - Subpart D Chemicals and Chemical Categories to which 40 CFR 372.65 Applies

Applicability	
<p>A table with alphabetical listing of categories and chemicals, including CAS numbers and effective date for each chemical is provided.</p> <p>Date of applicability: January 1, 1987</p>	<p>All facilities must characterize their chemicals.</p>

Forms and Instructions - Subpart E Toxic Chemical Release Reporting Form and Instruction - 40 CFR 372.85

Applicability	
<p>See Reporting Requirements - Subpart B.</p>	<p>See Reporting Requirements and Schedule for Reporting, 40 CFR 372.30.</p>

APPENDIX A.5

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, LIABILITY, AND COMPENSATION ACT (CERCLA)

The following sections provide a summary of the principal regulations developed pursuant to CERCLA that may apply to the food processing industry. The regulations included are:

- **40 CFR 302** - Designation, Reportable Quantities, and Notification

40 CFR 302

Designation, Reportable Quantities, and Notification

Designation of Hazardous Substances, 40 CFR 302.4

Requirements	
<p>Under Section 102(a) of CERCLA, these regulations identify reportable quantities of hazardous substances and set forth reporting requirements of releases.</p> <p>Listed hazardous substances are in 40 CFR 302, Table 302.4 and are designated as "hazardous under Section 102 (a) of CERCLA." Also included are "unlisted" hazardous substances which are defined in 40 CFR 302.4(b) as characteristics of hazardous waste.</p>	<p>The Table includes the reportable quantities of these substances. Unlisted hazardous substances have reportable quantity limit of 100 pounds (40 CFR 302.5), except for unlisted hazardous wastes that exhibit extraction procedure (EP) toxicity as identified in Part 261 which vary based on the reportable quantity of the pollutant of concern and its lowest value in Table 40 CFR 302.4. Appendix A of 40 CFR 302.4 contains a sequential Chemical Abstract Service (CAS) number listing of chemicals and Appendix B contains a listing of regulated radionuclides.</p>

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Notification Requirements, 40 CFR 302.6

Requirements	
<p>Facilities which release reportable quantities established in 40 CFR 302, Table 302.4 must immediately notify the National Response Center at (800) 424-8802 or in the Washington D.C. area at (202) 426-2675.</p> <p>40 CFR 302, Table 302.4 is used to determine whether the regulations apply to a specific facility based on chemicals that are released.</p>	<p>Exposure to persons within a workplace is excluded. Reportable quantities range from 1 to 5,000 pounds. Release means any spill, leak, pumping, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. Specific requirements for various types of radionuclides, including those which are exempt from reporting to the National Response Center are given in 40 CFR 302.6.</p>

APPENDIX A.6

SUMMARY OF PRINCIPAL REGULATIONS UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT

The following sections provide summaries of the principal regulations developed pursuant to RCRA that may apply to the food processing industry. The section includes:

- C **40 CFR 261.5 and 262.34** - Generator Classifications and Requirements
- C **40 CFR 262** - Hazardous Waste Generator Requirements
- C **40 CFR 263** - Hazardous Waste Transporter Requirements
- C **40 CFR 268** - Land Disposal Restrictions
- C **40 CFR 280** - Underground Storage Tanks (UST)

40 CFR 261.5 and 262.34

Generator Classifications and Requirements

Conditionally Exempt Small Quantity Generator (CESQG)

Requirements	Affected Facility
<ul style="list-style-type: none">• Make hazardous waste determination under 40 CFR 262.11• Waste must be managed and disposed in a hazardous waste facility, or a landfill or other facility approved by the State for industrial or municipal wastes• Must comply with 40 CFR 261.5(g) to be excluded from requirements under 40 CFR 262 through 266, 268, and 270.	<ul style="list-style-type: none">• Generate 100 kg/month (220 lbs/month) or less of hazardous waste, or• Generate 1 kg/month (2.2 lbs/month) or less of acute hazardous waste, or• Accumulate up to 1,000 kg (2,200 lbs) of hazardous waste onsite at any time

40 CFR 262

Hazardous Waste Generator Requirements

Small Quantity Generator (SQG)

Requirements	Affected Facility
<ul style="list-style-type: none">• Subject to regulation under 40 CFR 262 through 266, 268, and 270.• Special requirements under 40 CFR 265.201 for accumulating hazardous waste in tanks.• May not accumulate more than 6,000 kg of hazardous waste at any time.• May not accumulate hazardous waste onsite for longer than 180 days (270 days if waste must be transported over 200 miles to hazardous waste facility), otherwise hazardous waste storage permit required.	<ul style="list-style-type: none">• Generate more than 100 kg/month (220 lbs/month) of hazardous waste, but less than 1,000 kg/month (2,200 lbs/month) of hazardous waste, or• Accumulate more than 1,000 kg (2,200 lbs), but less than 6,000 kg of hazardous waste at any time

Large Quantity Generator (LQG)

Requirements	Affected Facility
<ul style="list-style-type: none">• Subject to regulation under 40 CFR 262 through 266, 268, and 270.• May not store hazardous waste onsite for more than 90 days, otherwise hazardous waste storage permit required.	<ul style="list-style-type: none">• Generate 1,000 kg/month (2,200 lbs/month) or more of hazardous waste, or• Generate 1 kg/month (2.2 lbs/month) or more of acutely hazardous waste, or• Generate 100 kg/month (220 lbs/month) or more of spill cleanup debris containing an acutely hazardous waste, or• Accumulate 1 kg (2.2 lbs) or more of acutely hazardous waste at any time

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40 CFR 262 - HAZARDOUS WASTE GENERATOR REQUIREMENTS		
Requirements	Description	Affected Facility
<p>EPA ID Number 40 CFR 262.12</p> <p>Subpart B - Manifest Requirements 40 CFR 262.20-260.33</p> <p>Subpart C - Pre-transport Requirements 40 CFR 262.30-262.34</p> <p>Subpart D - Recordkeeping and Reporting 40 CFR 262.40-262.44</p>	<ul style="list-style-type: none"> • Cannot treat, store dispose of, or transport hazardous waste without EPA ID Number • Cannot offer hazardous waste to transporter or to treatment, storage, or disposal facilities that do not have an EPA ID Number • Must complete and sign EPA form 8700-22 or 8700-22A for each shipment of hazardous waste • Must label and package hazardous waste in accordance with DOT regulations (49 CFR Parts 172, 173, 178, 179) prior to transport • Accumulation in units that comply with Subpart I of 40 CFR 265 (containers), or Subpart J of 40 CFR 265 (tanks) • Accumulation in units that comply with air emission standards identified in 40 CFR 265 Subparts AA (process vents), BB (equipment leaks) and CC (tanks, surface impoundments and containers) and with Subpart DD (containment buildings) • Must develop and maintain a contingency plan for storing wastes onsite • Maintain copies of manifest for three years • Must prepare and submit Biennial Report • Must file exception report if manifests not received by designated facility within 35 days (LQG) or 60 days (SQG) 	<p>LQG or SQG that transports, or offers for transportation, hazardous waste for offsite treatment, storage or disposal</p> <p>SQGs allowed up to 180 (or 270) days for accumulating hazardous waste without a storage permit</p> <p>May accumulate wastes up to 90 days without storage permit</p> <p>SQG exempt from biennial reporting requirements</p>

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40 CFR 262 - HAZARDOUS WASTE GENERATOR REQUIREMENTS		
Requirements	Description	Affected Facility
Subpart E - Exports of Hazardous Waste 40 CFR 262.50-262.57 Subpart F - Imports of Hazardous Waste 40 CFR 262.60	<ul style="list-style-type: none"> • Notify EPA 60 days before shipment • Must confirm waste receipts or file an exception report • Must file a Summary Report of Foreign Activity on March 1 of each year • Must prepare manifest that identifies foreign generator and importer • Must comply with all other generator standards in 40 CFR 262 	

40 CFR 263 Hazardous Waste Transporter Requirements

40 CFR 263 - HAZARDOUS WASTE TRANSPORTER REQUIREMENTS		
Requirements	Description	
EPA ID Number 40 CFR 263.11 Transfer Facility Requirements 40 CFR 263.12 Manifest and Recordkeeping Requirements 40 CFR 263.20 Hazardous Waste Discharges 40 CFR 263.30	<ul style="list-style-type: none"> • Must obtain an EPA ID Number in order to transport hazardous waste • May store manifested shipments for ten days or less, otherwise subject to hazardous waste storage requirements under 40 CFR 264, 265, 268, and 270 • Cannot receive a waste shipment unless accompanied by a hazardous waste manifest • Take appropriate action • Notify proper authorities 	Persons who transport hazardous waste within the U.S. if manifest is required under 40 CFR Part 262.

40 CFR 268

Land Disposal Restrictions - Certification and Notification

40 CFR 268 - GENERATOR - CERTIFICATION AND NOTIFICATION		
Requirements	Description¹	Affected Facility
Waste Analysis and Recordkeeping for Generators 40 CFR 268.7(a)	<ul style="list-style-type: none"> C Must determine if waste is restricted from land disposal C If waste does not meet treatment standards in 40 CFR 268 Subpart D, must provide a one-time notification to treatment or storage facility receiving waste C If waste meets treatment standards in 40 CFR 268 Subpart D, must submit a one-time notification and certification to treatment, storage, or disposal facility receiving the waste C If accumulating and treating restricted wastes onsite, must develop waste analysis plan and keep in files onsite C Maintain copies of records, certifications, and notices for three years. Records may be maintained electronically 	LQGs and SQGs

¹ EPA recently amended the LDR regulations. For more information, see the Federal Register Vol. 62 No. 91; May 12, 1997.

40 CFR 280 - UNDERGROUND STORAGE TANK REQUIREMENTS		
Requirements	Description	Affected Facility
Design, Construction, Installation, and Notification (Subpart B)	<ul style="list-style-type: none"> C New USTs (installed after December 1988) must meet performance standards detailed in 40 CFR 280.20 C All existing UST systems (installed before December 1988) must be upgraded to meet standards detailed in 40 CFR 280.21 by December 1998 C Notify State and/or local agencies upon the installation and use of new UST systems (40 CFR 280.22) 	All owners and operators of underground storage tank systems as defined in 40 CFR 280.12 (See Section 280.10 (b-d) for exceptions)

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40 CFR 280 - UNDERGROUND STORAGE TANK REQUIREMENTS		
Requirements	Description	Affected Facility
General Operating Requirements (Subpart C)	<ul style="list-style-type: none"> C Must ensure the prevention of releases through spill and overfill control, proper corrosion protection, use of compatible materials, and proper and appropriate repairs to the UST system C Reporting requirements include notification, reports of all releases (suspected and confirmed), corrective action, and permanent changes in service or closure. C Recordkeeping requirements include documentation of corrosion controls, UST system repairs, release detection compliance 	
Release Detection (Subpart D)	<ul style="list-style-type: none"> C Must provide a method or combination of methods to detect leaks and releases from the UST system C Must comply with release detection requirements according to the schedule set forth in 40 CFR 280.40(c) C Petroleum USTs must comply with release detection requirements under 40 CFR 280.41 C Hazardous substance USTs must comply with release detection requirements under 40 CFR 280.42 C Must maintain records demonstrating compliance with release detection requirements 	
Release Reporting, Investigation, and Confirmation (Subpart E)	<ul style="list-style-type: none"> C Must report any suspected releases within 24 hours or another reasonable time period specified by implementing agency C Must investigate and confirm any suspected releases C Must contain and cleanup any release, and report to implementing agency 	
Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances (Subpart F)	<p>In the event of a release:</p> <ul style="list-style-type: none"> C Must notify implementing agency upon confirmation of a release, and take action as necessary 	UST systems that manage petroleum or hazardous substances.

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40 CFR 280 - UNDERGROUND STORAGE TANK REQUIREMENTS		
Requirements	Description	
Out-of-Service UST Systems and Closure (Subpart G)	C	Must notify within 30 days of permanent closure
	C	Must maintain records to demonstrate compliance with closure requirements in accordance with 40 CFR 280.34
Financial Responsibility (Subpart H)	C	Must demonstrate financial responsibility for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases

APPENDIX A.7

PROPOSED AND PENDING REGULATIONS

CWA	
Pending SPCC Proposals	October 22, 1991 (56 FR 45612) February 17, 1993 (58 FR 8824) December 2, 1997 (62 FR 63811)
CAA: MACTs Affecting SIC Code 20 Facilities:	
MACTs affecting the SIC Code 20 facilities include: Aerosol Can-Filling Facilities, Baker's Yeast Manufacturing, Cellulose Food Casing Manufacturing, and Vegetable Oil Production	November 15, 2000
CEPPO's the use of NAICS codes: <i>Accidental Release Prevention Requirements: Risk Management Programs Under Clean Air Act Section 112 (r)(7) Amendments.</i>	Proposed rule: 63 FR 19216, April 17, 1998. Final rule anticipated October 1998.
SDWA	
Interim Enhanced Surface Water Treatment Rule and Stage 1 Disinfection Byproduct Rule	November 1998 - Propose Rule November 1999 - Final Rule November 2001 - Implementation
State II Disinfection Byproducts Rule	May 2002 - Propose Rule
Filter Backwash Recycling Rule	May 2002 - Final Rule
Groundwater Disinfection Rule: Issue regulations requiring disinfection for all public water systems, including surface water systems and "as necessary" groundwater systems, and promulgate criteria for determining whether to require in groundwater systems.	After August 1999 By May 2002
Long Term 1 Enhanced Surface Water Treatment Rule (LTESWTR)	November 2000 - Final Rule

APPENDIX B. RESOURCES

Introduction

This section presents lists of federal and state contacts that you can call or access via the Internet if you are seeking additional information on a particular issue or regulation. A quick reference list of EPA hotlines and Internet addresses is presented below, followed by contacts for the following:

- C Clean Water Act (CWA)
- C Safe Drinking Water Act (SDWA)
- C Clean Air Act (CAA)
- C Emergency Planning and Community Right-To-Know-Act (EPCRA)
- C Resource Conservation and Recovery Act (RCRA)
- C Toxic Substances Control Act (TSCA)
- C Business policies and contacts
- C EPA, state and local references and contacts.

Quick Reference List

Hotlines		
National Response Center Hotline		(800) 424-8802
CWA	Storm Water Hotline (NPDES Program)	(800) 245-6510
	National Small Flows Clearinghouse	(800) 624-8301
	Wetlands Information Hotline	(800) 832-7828
	National Small Flows Clearinghouse	(800) 624-8301
	Water Quality Information Center	(301) 504-6077
SDWA	Safe Drinking Water Hotline	(800) 426-4791
	National Drinking Water Clearinghouse	(800) 624-8301
CAA	Stratospheric Ozone Information Hotline	(800) 296-1996
	Air RISC Information Support Center Hotline	(919) 541-0888
	Asbestos Ombudsman Clearinghouse/Hotline	(800) 368-5888
	Control Technology Center	(919) 541-0800
	Indoor Air Quality Information Clearinghouse	(800) 438-4318 or (202) 484-1307

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Hotlines		
	RCRA/UST, Superfund, and EPCRA Hotline (Provides information on the Risk Management Program under the CAA.)	(800) 424-9346 or (703) 412-9810
EPCRA	RCRA/UST, Superfund and EPCRA Hotline [Also CAA Section 112(r) - RMP]	(800) 424-9346 or (703) 412-9810
RCRA	RCRA/UST, Superfund and EPCRA Hotline [Also CAA Section 112(r) - RMP]	(800) 424-9346 or (703) 412-9810
	Hazardous Waste Ombudsman	(800) 262-7937 or (202) 260-9361
TSCA	TSCA Assistance Information Service	(202) 554-1404
Small Business	EPA's Small Business Ombudsman Clearinghouse/Hotline	(800) 368-5888 or (703) 305-6462

EPA Internet Sites

C	EPA's Home Page	http://www.epa.gov
C	EPA Public Information Center	http://www.epa.gov/PIC.html
C	EPA's Pollution Prevention Information Clearinghouse	http://www.epa.gov/opptintr/library/libppic.htm
C	Pollution Prevention Home Page	http://www.epa.gov/opptintr/p2home
C	EPA's EnviroSense	http://www.epa.gov/envirosense
C	Emergency Response	http://www.epa.gov/ERNS
C	Toxic Release Inventory	http://www.epa.gov/opptintr/tri
C	ECPRA laws	http://www.epa.gov/swercepp/rules.html
C	Electronic Tools	http://www.epa.gov/swercepp/tools.html
C	EPA's Oil Program Home Page	http://www.epa.gov/oilspill

EPA Information Centers

- C **EPA Main Library**
401 M Street, SW., Room 2904
Washington, DC 20460
Phone: (202) 260-5921
Fax: (202) 260-6257
E-mail: Library-HQ@epamail.epa.gov

The EPA's Main Library maintains environmental reference materials for EPA staff and the general public, including books, journals, abstracts, newsletters, and audio-visual materials generated by government agencies and the private sector. This library also provides access to online computer service bulletin boards and CD-ROM systems.

- C **EPA Public Information Center**
401 M Street, SW Mail Code 3404
Washington, DC 20460
(202) 260-5922
Fax: (202) 260-6251
E-mail: public-access@epamail.epa.gov
Internet Address: <http://www.epa.gov/PIC.html>

The Public Information Center (PIC) is a primary point of contact between EPA and the public. PIC refers calls and letters to the appropriate sources for technical information, and distributes a variety of general-interest items. The PIC is also a visitor center featuring environmental videos, photographic displays, CD-ROMs, and databases. Interested groups are encouraged to tour the facility as an introduction to the Agency as well as to learn about the environment. PIC's audience includes the general public; international visitors; students and educators; EPA and other government staff; and business, civic, and environmental groups.

- C **EPA's Pollution Prevention Information Clearinghouse**
401 M Street, SW Mail Code 7407
Washington, DC 20460
Phone: (202) 260-1023
Fax: (202) 260-4659
E-mail: ppic@epamail.epa.gov
Internet address: <http://www.epa.gov/opptintr/library/libppic.htm>

The Pollution Prevention Information Clearinghouse (PPIC) is a free, nonregulatory service of the U.S. EPA. PPIC is dedicated to reducing or eliminating industrial pollutants through technology transfer, education, and public awareness. A Reference and Referral Telephone Service is available to answer questions, take orders for documents distributed by PPIC, or refer callers to appropriate contacts. The Clearinghouse distributes selected EPA documents, pamphlets, information packets, and fact sheets on pollution prevention free of charge.

- C **EPA's EnviroSense**
<http://www.epa.gov/envirosense>

EPA's EnviroSense, part of EPA's website, provides a single repository for pollution prevention, compliance assurance, and enforcement information, and databases from web sites inside and outside the EPA. EnviroSense houses the web site for EPA's Office Enforcement and Compliance Assurance (OECA). It offers extensive case study collections, research funding information, abstracts of research projects conducted through the National Center for Environmental Research and Quality Assurance (NCERQA), industry and process-specific fact sheets, economic and cost/benefit information, audit and guidance materials, materials exchange, and announcements from the National Enforcement Training Institute (NETI).

Clean Water Act

- C **EPA's Water Resource Center**
401 M Street, SW Mail Code: RC4100
Washington, DC 20460
Telephone: (202) 260-7786
Fax: (202) 260-0386
E-mail: waterpubs@epamail.epa.gov

The Water Resource Center (WRC) distributes documents and other materials produced by the Office of Ground Water and Drinking Water, the Office of Science and Technology, and the Office of Wastewater Management, and provides limited research assistance to locate materials from these offices.

- **EPA's Oil Spill Program**
To access the EPA's Oil Spill Program Information Line, call the RCRA/UST, Superfund and EPCRA Hotline at:
(800) 424-9346 or (703) 412-9810
(800)-535-7672 TDD line for the hearing-impaired
(703) 412-3323 TDD in DC area
Fax: (703) 603-9234
To report an oil or hazardous substance release, call the National Response Center at (800) 424-8802.
Internet address: <http://www.epa.gov/oilspill>

EPA's Oil Spill Program is designed to prevent oil spills, as well as prepare for and respond to any oil spill affecting the inland waters of the U.S. The program is administered by EPA Headquarters and the 10 EPA Regions. For more information, access the web address listed above.

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C Storm Water Hotline (Region 6 Multi-Sector General Permit (MSGP) Hotline)

Telephone: (800) 245-6510

The Region 6 Multi-Sector General Permit Hotline serves as a clearinghouse for information concerning U.S. EPA Storm Water General Permits. Information specialists are available to answer technical questions concerning permit eligibility, specific permit requirements, and more. In addition, callers may order many storm water-related documents and guidance manuals.

C Wetlands Information Hotline

Telephone: (800) 832-7828

This hotline, working in connection with EPA's Wetlands Preservation Division, responds to requests for information regarding the values and functions of wetlands and options for their protection.

C National Small Flows Clearinghouse

West Virginia University

P.O. Box 6064

Morgantown, WV 26506

Telephone: (800) 624-8301

This hotline provides information and technical assistance to help small communities reach practical, affordable solutions with their wastewater treatment problems.

C Water Quality Information Center

Telephone: (301) 504-6077

A government clearinghouse for information on water quality and agriculture.

C Water Environment Federation

601 Wythe Street

Alexandria, VA 22314-1994

Telephone: (800) 666-0206 or (703) 684-2452

Fax: (703) 684-2492

The Water Environment Federation (WEF) is an international not-for-profit educational and technical organization of over 40,000 water experts. WEF has guided technological developments in water quality and provides its members and the public with the latest information on wastewater treatment and water quality protection.

Safe Drinking Water Act

C *Safe Drinking Water Hotline*

401 M Street, SW Mail Code 4604
Washington, DC 20460
Telephone: (800) 426-4791
Fax: (703) 285-1101
E-mail: hotline-sdwa@epamail.epa.gov

This SDWA hotline provides information about EPA's drinking water regulations and other related drinking water and ground water topics to the regulated community, State and local officials, and the public. Specifically, the Hotline clarifies drinking water regulations, provides appropriate 40 CFR and Federal Register citations, explains EPA-provided policies and guidelines and gives update information on the status of regulations. The Hotline can also provide State and local contacts. The Hotline can take orders for EPA drinking water publications or (if the publication is not available from the Office of Water) refer callers to the appropriate ordering organization.

C *National Drinking Water Clearinghouse*

West Virginia University
P.O. Box 6064
Morgantown, WV 26506
Telephone: (800) 624-8301

This clearinghouse provides free and low-cost technical assistance and information on small community drinking water systems.

C *The American Water Works Association*

1401 New York Ave., N.W., Suite 640
Washington, DC 20005
Telephone: (202) 628-8303

The American Water Works Association (AWWA) is an international nonprofit scientific and educational society dedicated to the improvement of drinking water quality and supply. Its more than 50,000 members represent the full spectrum of the drinking water community: treatment plant operators and managers, scientists, environmentalists, manufacturers, academicians, regulators, and others who hold genuine interest in water supply and public health. Membership includes more than 3,700 utilities that supply water to roughly 170 million people in North America.

WaterWiser is the AWWA's clearinghouse on water efficiency information.

6666 West Quincy Avenue
Denver, CO 80235
Telephone: (800) 559-9855

Clean Air Act

C *Stratospheric Ozone Information Hotline*

Telephone: (800) 296-1996

Fax: (202) 775-6681

The Stratospheric Ozone Information Hotline provides in-depth information on ozone protection regulations and requirements under Title VI of the Clean Air Act Amendments of 1990. Information on the transition to non-ozone-depleting chemicals in various use sectors, as well as retrofitting equipment and refrigerant management is also available. In addition, the Hotline serves as a distribution center and point of referral for an array of information pertaining to other general aspects of stratospheric ozone depletion and its protection. The Hotline maintains a library of relevant policy and science documents, reports, articles, and contact lists.

C *Asbestos Ombudsman Clearinghouse/Hotline*

Telephone: (800) 368-5888 or (703)305-5938

Fax: (703) 305-6462

The Asbestos Ombudsman Clearinghouse/Hotline responds to requests for information relating to the handling and abatement of asbestos in schools, the workplace, and the home. The information is available to the public, including individual citizens and those involved in community services. In addition, the hotline offers assistance to small businesses in complying with EPA regulations.

C *Control Technology Center*

Telephone: (919) 541-0800

The CTC offers technical support and guidance concerning air pollution emissions pollution prevention, and control technology for all air pollutants, including air toxins emitted by stationary sources.

C *Indoor Air Quality Information Clearinghouse*

P.O. Box 37133

Washington, DC 20013-7133

Telephone: (800) 438-4318, (202) 484-1307

Fax: (202) 484-1510

E-mail: iaqinfo@aol.com

Internet address: <http://www.epa.gov/iedweb00/iaqinfo.html>

The Indoor Air Quality Information Clearinghouse (IAQ INFO) provides access to public information on indoor environments through a range of services including: an operator-assisted hotline; distribution of relevant EPA publications at no charge; literature searches on a topic for further reference; referrals to appropriate government agencies, research, public interest, and industry representatives; and information about training courses and materials. IAQ INFO responds to inquiries from the general public, state and local government officials, service providers, educators, and health professionals. IAQ INFO provides information on many aspects of indoor air quality including pollutants such

as carbon monoxide, radon, and biological contaminants; problem prevention approaches; testing, measurement and mitigation; and legislation, guidelines, and voluntary programs.

- C ***Air RISC Information Support Center Hotline***
Office of Air Quality Planning and Standards, MD-15
Research Triangle Park, NC 27711
Telephone: (919) 541-0888, 541-5741
Fax: (919) 541-0824, 541-2045
Internet address: http://www.epa.gov/oar/oaq_ttn.html

The Air RISC provides technical assistance and information in areas of health, risk, and exposure assessment for toxic and criteria air pollutants. Services include the hotline for direct access to EPA experts; detailed technical assistance for more in-depth evaluations or information; and general technical guidance in the form of documents, reports and training materials related to health, risk and exposure assessment. Air RISC can also be accessed through the OAQPS Technology Transfer Network (TTN).

- C ***RCRA/UST, Superfund and EPCRA Hotline***

This hotline provides information on the Risk Management Program under the Clean Air Act (CAA) Section 112(r). See telephone numbers and an additional description of this hotline in the next item below.

Emergency Planning and Community Right-To-Know Act

- C ***RCRA/UST, Superfund and EPCRA Hotline***
Telephone: (800) 424-9346 or (703) 412-9810
(800)-535-7672 TDD line for the hearing-impaired
(703) 412-3323 TDD in DC area
Fax: (703) 603-9234

This hotline provides information about the regulations and programs implemented under the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA or Superfund), the Emergency Planning, Community Right-to-Know Act (EPCRA)/ Superfund Amendments Reauthorization Act (SARA Title III), and the Risk Management Program under the Clean Air Act (CAA) Section 112(r). This hotline also provides referrals for documents related to these programs. Translation is available for Spanish-speaking callers.

Resource Conservation and Recovery Act

- C ***RCRA/UST, Superfund and EPCRA Hotline***
Telephone: (800) 424-9346 or (703) 412-9810
(800)-53-7672 TDD line for the hearing-impaired
(703) 412-3323 TDD in DC area

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Fax: (703) 603-9234

E-mail: RCRA-Docket@epamail.epa.gov

Internet address: <http://www.epa.gov/epaoswer/hotline/index.htm>

This hotline answers factual questions about EPA regulations and programs under RCRA, Superfund, and EPCRA, and responds to requests for relevant documents. Specifically, the Hotline responds to inquiries about waste minimization programs required under RCRA, source reduction and hazardous waste combustion, Section 6607 of the Pollution Prevention Act of 1990, which expanded data collection under EPCRA 313, and other components of the waste management regulatory programs. This hotline also provides referrals for documents related to these programs. Translation is available for Spanish-speaking callers.

C Hazardous Waste Ombudsman

Telephone: (800) 262-7937 or (202) 260-9361

The Hazardous Waste Management Program, established under the Resource Conservation and Recovery Act (RCRA) assists the public and the regulatory community in resolving problems concerning any program or requirement under the Hazardous Waste Program. The ombudsman handles complaints from citizens and the regulatory community, conducts investigations, undertakes site reviews, issues reports, and serves as a national resource for the newly appointed ombudsman in the 10 EPA Regions. The ombudsman also provide information on the Risk Management Program under the Clean Air Act (CAA) Section 112 (r).

Toxic Substances Control Act

C Toxic Substances Control Act (TSCA) Assistance

Telephone: (202) 554-1404

Fax: (202) 554-5603

Email: tscashotline@epamail.epa.gov

The information service furnishes TSCA regulation information to the chemical industry, labor and trade organizations, environmental groups, and the general public. Technical as well as general information is available.

Business Policies and Contacts

Business Policies

C Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996

This Act (Title II of Public Law 104-121) was signed into law by President Clinton on March 29, 1996 in order to accomplish several key objectives: (1) to encourage small businesses to participate more in the Federal regulatory process; (2) to require Federal agencies to become more responsive to small business inquiries relating to regulatory and

reporting requirements; (3) to promote greater cooperation between small businesses and government agencies through less punitive and more solution-oriented approaches to environmental compliance; and (4) to make federal agencies more accountable for excessive enforcement actions by permitting small businesses to go to court to be awarded attorney's fees and costs.

For more information about the Small Business Regulatory Enforcement Fairness Act (SBREFA), access the following Internet address:
<http://www.sba.gov/regfair/overview.html/>.

C *Final Policy on Compliance Incentives for Small Businesses*

This policy implements Section 323 of the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. This Policy, effective June 10, 1996, is intended to promote environmental compliance among small businesses by providing them with special incentives to participate in compliance assistance programs or to conduct environmental audits, and to help them promptly correct violations. The federal or state governments can waive all or a portion of a penalty when a violation is (1) identified through government-supported on-site compliance assistance or through an environmental audit, (2) disclosed, and (3) corrected. Under this policy, a "small" business is defined as having 100 or fewer employees across all facilities and operations owned by the entity. There is no limitation on the amount of pollutants produced by the small business.

You can obtain more information on this policy and how it may apply to your business by reviewing the final policy in the Federal Register [61 FR 27984 (June 3, 1996)] or by accessing EPA's Enviro\$en\$e site at: <http://es.inel.gov/oeca/smbusi.html/>.

C *Incentives for Self Policing: Discovery, Disclosure, Correction and Prevention of Violations Policy*

This policy mitigates or eliminates penalties for all entities, including small and large businesses, who voluntarily discover, disclose and correct violations of environmental regulations by conducting environmental audits or implementing systematic procedures reflecting the facility's due diligence.

You can obtain additional information on this self-policing policy by reviewing the final policy in the Federal Register [60 FR 66706-66711 (December 22, 1995)] or by accessing EPA's Environ\$en\$e site at: <http://es.inel.gov/oeca/ore/aed/comp/acomp/a26.html/>.

C *The 507 Small Business Enforcement Policy*

Section 507 of the 1990 Clean Air Amendments required the States to establish Small Business Stationary Source Technical and Environmental Compliance Assistance Programs. Because of State concerns that small businesses would not ask for compliance assistance if violations resulted in enforcement actions, the EPA issued the "Enforcement Response Policy for Treatment of Information Obtained Through Clean Air Act Section 507 Small Business Assistance Programs (August 12, 1994)." This policy was designed to encourage small businesses to seek compliance assistance from the States by offering two types of incentives. The first incentive allows small businesses that receive compliance assistance up to 90 days, with the possibility of an additional 90 day

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extension, to correct any violations discovered under the Small Business Assistance Program (SBAP). The second incentive offers compliance assistance on a confidential basis, as long as: a) the State can investigate and/or take enforcement action independent of the Section 507 program if violations are discovered; and b) confidential assistance can only be offered through SBAPs that operate independently of the state's regulatory enforcement program.

You can obtain additional information on Section 507 by accessing EPA's Environment sites at: <http://es.inel.gov/oeca/ccsmd/file3.html> or <http://es.inel.gov/oeca/ccsmd/file11.html>.

Small Business Hotlines and Contacts

C *EPA's Small Business Ombudsman Clearinghouse/Hotline*

401 M Street, SW Mail Code: 1230C
Washington, DC 20460
Telephone: (800) 368-5888 or (703) 305-5938
Fax: (703) 305-6462

The mission of the EPA Small Business Ombudsman Clearinghouse/Hotline is to provide information to private citizens, small communities, small business enterprises, and trade associations representing the small business sector regarding regulatory activities. Mailings are made to update the audience on recent regulatory actions. Special attention is directed to apprising the trade associations representing small business interests with current regulatory developments. Technical questions are answered following appropriate contacts with program office staff members. Questions addressed cover all media program aspects within EPA. Inquiries are received by mail, telephone, and fax.

State Small Business Assistance Programs (SBAPs)

- C For a list of state resources for small businesses and links to other government information centers (such as the Small Business Administration), access the following Internet address: <http://www.epa.gov/ttn/sbap/related.html>. For more information available by phone and mail, contact the Small Business Ombudsman listed above.

- C Additional information for small businesses can be found at the following EPA internet address: <http://www.epa.gov/epahome/smallbus.htm>.

EPA, State and Local References and Contacts

EPA Headquarters

Environmental Protection Agency
401 M St, SW
Washington, DC 20460
Telephone: (202) 260-2090

Regional US Environmental Protection Agency Contacts

Region 1 (CT, MA, ME, NH, RI, VT)

One Congress Street
John F. Kennedy Building
Boston, MA 02203-0001
Phone: (617) 565-3420
Fax: (617) 565-3660
Toll Free: (888) 372-7341
Website: <http://www.epa.gov/region01/>

Region 2 (NJ, NY, PR, VI)

290 Broadway, New York
NY 10007-1866
Phone: (212) 637-3000
Fax: (212) 637-3526
Website: <http://www.epa.gov/region2/>

Region 3 (DC, DE, MD, PA, VA, WV)

1650 Arch Street
Philadelphia, PA 19103-2029
Phone: (215) 814-5000
Fax: (215) 814-5103
Toll free: (800) 438-2474
Website: <http://www.epa.gov/region03/>

Region 4 (AL, FL, GA, KY, MS, NC, SC, TN)

Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-3104
Phone: (404) 562-9900
Fax: (404) 562-8335
Toll free: (800) 241-1754
Website: <http://www.epa.gov/region4/reg4.html/>

Region 5 (IL, IN, MI, MN, OH, WI)

Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507
Phone: (312) 353-2000
Fax: (312) 353-1155
Toll free: (800) 621-8431
Website: <http://www.epa.gov/region5/>

Region 6 (AR, LA, NM, OK, TX)

Environmental Protection Agency
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733
Phone: (214) 665-2200
Fax: (214) 665-2146
Toll free: (800) 887-6063
Website: <http://www.epa.gov/earth1r6/index.htm/>

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Region 7 (IA, KS, MO, NE)

Environmental Protection Agency
726 Minnesota Avenue
Kansas City, KS 66101
Phone: (913) 551-7003
Fax: (913) 551-7467
Toll free: (800) 223-0425
Website: <http://www.epa.gov/rgytmj/>

Region 8 (CO, MT, ND, SD, UT, WY)

Environmental Protection Agency
999 18th Street Suite 500
Denver, CO 80202-2466
Phone: (303) 312-6312
Fax: (303) 312-7061
Toll free: (800) 227-8917
Website: <http://www.epa.gov/unix0008/>

Region 9 (AZ, CA, HI, NV)

Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 744-1305
Fax: (415) 744-1070
Website: <http://www.epa.gov/region09/>

Region 10 (AK, ID, OR, WA)

Environmental Protection Agency
1200 6th Avenue
Seattle, WA 98101
Phone: (206) 553-1200
Fax: (206) 553-6984
Toll free: (800) 424-4372
Website: <http://www.epa.gov/r10earth/>

State References

C "Sourcebook of State Laws & Regulations for Food Processors"

National Food Processors Association
1401 New York Avenue, NW
Washington, DC 20005
Phone: (202) 639-5954

This report helps food companies understand the industry's political, legal, and regulatory environment in every state. The report covers topics such as food labeling and standards, food packaging, food safety, food taxes, product liability, and school lunch programs. The report also helps the strategic planning of companies in the food industry to operate and site their plants most efficiently and help shape legislation affecting the food processing industry.

State and Local Contacts

- Information on State environmental agencies is provided below. Links to all state environmental agencies can be accessed at the Environmental Professional's Homepage at <http://www.clay.net/>.
- State Air Pollution Agencies: State and Territorial Air Pollution Administrators (STAPPA) and Association of Local Air Pollution Control Officials (ALAPCO). This website contains links to state government agency home pages and other state government resources and can be accessed at <http://www.4cleanair.org/>.

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- C State Emergency Response Commissions and Local Emergency Planning Committees. This website, which contains a listing of SERCs and LEPCs, can be accessed at <http://www.epa.gov/swercepp/state.html/>. A list of SERC and LEPC contacts is provided below.

State Environmental Protection Agencies

Alabama

AL Conservation and Natural Resources
Department
PO Box 301501
Montgomery, AL 36130
Phone: (334) 240-9500
Fax: (334) 240-3380
Website: <http://dcnr.state.al.us/>

AL Department of Environmental
Management
1751 Cong. W. L. Dickinson Drive
PO Box 301463
Montgomery, AL 36109-1463
Phone: (334) 271-7700
Fax: (334) 271-7950
Website: <http://www.adem.state.al.us/>

Alaska

AK Department of Environmental
Conservation
410 Willoughby Avenue, Suite 105
Juneau, AK 99801-1795
Phone: (907) 465-5060
Fax: (907) 465-5070
TTY: (907) 465-5040
Website: <http://www.state.ak.us/local/akpages/env.conserv/home.htm/>

Arizona

AZ Department of Environmental Quality
3033 N. Central Avenue
Phoenix, AZ 85012
Phone: (602) 207-4300
Toll Free: (800) 234-5677
TTY: (602) 207-4829
Website: <http://www.adeq.state.az.us/>

Arkansas

AR Department of Pollution Control and Ecology
8001 National Drive, PO Box 8913
Little Rock, AR 72209
Phone: (501) 682-0744
Fax: (501) 682-0798
Website: <http://adeq.state.ar.us/>

California

CA Environmental Protection Agency
555 Capitol Mall, Suites 235 & 525
Sacramento, CA 95814
Phone: (916) 445-3846
Website: <http://calepa.ca.gov/>

Colorado

Department of Natural Resources
1313 Sherman Street, Room 718
Denver, CO 80203
Phone: (303) 866-3311
Fax: (303) 866-2115

CO Department of Public Health & Environment
(CDPHE)
4300 Cherry Creek Drive South
Denver, CO 80222-1530
Phone: (303) 692-2000
Fax: (303) 782-0095
TTY: (303) 691-0770
Website: http://www.state.co.us/gov_dir/cdphe_dir/cdphe.hom.html/

Connecticut

CT Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
Phone: (860) 424-3000
Fax: (860) 424-4053
Website: <http://.dep.state.ct.us/>

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Delaware

DE Department of Natural Resources and
Environmental Control
89 Kings Highway, PO Box 1401
Dover, DE 19903
Phone: (302) 739-5823
Fax: (302) 739-6242
Website: <http://www.dnrec.state.de.us/>

District of Columbia

DC Environmental Regulation
Administration
2100 Martin Luther King Avenue, SE
Suite 203
Washington, DC 20020
Phone: (202) 645-6617
Fax: (202) 645-6102

Florida

FL Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000
Phone: (850) 488-1073
Fax: (850) 921-6227
Website: <http://www.dep.state.fl.us>

Georgia

GA Department of Natural Resources
Environmental Division
205 Butler Street, SE, Suite 1152 East
Tower
Atlanta, GA 30334-1703
Phone: (404) 656-3500
Fax: (404) 651-5778
Website: <http://www.ganet.org/dnr/>

Hawaii

HI Land and Natural Resources Department
Kalanimoku Building
151 Punchbowl Street, PO Box 621
Honolulu, HI 96809
Phone: (808) 587-0330
Fax: (808) 587-0390
Website: <http://www.state.hi.us/dlnr/>

HI Department of Health
1250 Punchbowl Street, 3rd Floor
PO Box 3378
Honolulu, HI 96801
Phone: (808) 586-4400
Fax: (808) 586-4444
Website: <http://www.hawaii.gov/health/>

Idaho

ID Division of Environmental Quality
1410 N. Hilton
Boise, ID 83706
Phone: (208) 373-0502
Fax: (208) 373-0417

Illinois

IL Environmental Protection Agency
1021 North Grant Avenue East
PO Box 19276
Springfield, IL 62794-9276
Phone: (217) 782-3397
Fax: (217) 785-7725
Website: <http://www.epa.state.il.us/>

Indiana

Indiana Department of Environmental
Management
105 N. Senate, PO Box 6015
Indianapolis, IN 46206-6015
Phone: (317) 232-8560
Toll Free: (800) 451-6027
TTY: (317) 233-6087
Website: <http://www.ai.org/idem/index.html/>

IN Department of Natural Resources
402 West Washington Street, Rm. W256
Indianapolis, IN 46204
Phone: (317) 233-3046
Fax: (317) 232-8036
Website: <http://www.ai.org/dnr/index.html/>

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Iowa

IA Department of Natural Resources
Wallace State Office Building
900 E. Grand Avenue
Des Moines, IA 50319-0034
Phone: (515) 281-5145
Fax: (515) 281-8895
TTY: (515) 242-5967
Website: <http://www.state.ia.us/government/dnr/index.html/>

Kansas

KS Department of Health & Environment
Landon State Office Building
900 SW Jackson Street
Topeka, KS 66612-1290
Phone: (785) 296-1522
Fax: (785) 368-6368
Website: <http://www.ink.org/public/kdhe/>

Kentucky

KY Natural Resources and Environmental
Protection Cabinet
Capital Plaza Tower, 5th Floor
500 Mero Street
Frankfort, KY 40601
Phone: (502) 564-3350
Website: <http://www.state.ky.us/agencies/nrepc/nrhome.htm/>

KY Environmental Quality Commission
14 Reilly Road
Frankfort, KY 40601
Phone: (502) 564-2150
Fax: (502) 564-4245
Website: <http://www.state.ky.us/agencies/eqc/eqc.html/>

Louisiana

LA Department of Environmental Quality
7290 Bluebonnet Boulevard, PO Box 82231
Baton Rouge, LA 70810
Phone: (504) 765-0741
Fax: (504) 765-0746
Toll Free: (888) 763-5424
24-Hour Hotline: (504) 342-1234
Website: <http://www.deq.state.la.us/>

LA Natural Resources Department
625 N. 4th Street, PO Box 94396
Baton Rouge, LA 70804-9396
Phone: (504) 342-4500
Fax: (504) 342-2707
Website: <http://www.dnr.state.la.us/>

Maine

ME Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017
Phone: (207) 287-7688
Toll Free: (800) 452-1942
Fax: (207) 287-2814
Web site: <http://www.state.me.us/dep/>

ME Conservation Department
22 State House Station
Augusta, ME 04333
Phone: (207) 287-2211
Fax: (207) 287-2400
TTY: (207) 287-2213

Maryland

MD Department of Environment
2500 Broening Highway
Baltimore, MD 21224
Phone: (410) 631-3000
Fax: (410) 631-3936
Toll Free: (800) 633-6101
TTY: (410) 631-3009
Website: <http://www.mde.state.md.us/>

Massachusetts

MA Department of Environmental Protection
1 Winter Street, 2nd Floor
Boston, MA 02108
Phone: (617) 292-5500
Fax: (617) 574-6880
Website: <http://www.magnet.state.ma.us/dem/>

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Michigan

MI Department of Environmental Quality
333 South Capital Avenue, PO Box 30457
Lansing, MI 48909-7957
Phone: (800) 662-9278
Fax: (517) 335-4729
Pollution Emergency Alerting System: (800)
292-4706
Website: <http://www.deq.state.mi.us/>

MI Natural Resources Department
Stevens T. Mason Building
530 W. Allegan Street, PO Box 30028
Lansing, MI 48909
Phone: (517) 373-1214
Fax: (517) 353-1547
Website: <http://www.dnr.state.mi.us/>

Minnesota

MN Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155-4040
Phone: (612) 296-6157
Fax: (612) 297-3618
Toll Free: (888) 646-6367
Website: <http://www.dnr.state.mn.us/>

MN Office of Environmental Assistance
520 Lafayette Road North, 2nd Floor
St. Paul, MN 55155-4100
Phone: (612) 296-3417
Fax: (612) 215-0246
Toll Free: (800) 657-3843
Website: <http://www.moea.state.mn.us/>

Mississippi

MS Dept. of Environmental Quality
2380 Highway 80 West, PO Box 20305
Jackson, MS 39289-1305
Phone: (601) 961-5171
Fax: (601) 961-5349
Website: <http://deq.state.ms.us/>

Missouri

MO Department of Natural Resources
205 Jefferson Street, PO Box 176
Jefferson City, MO 65101
Phone: (573) 751-4422
Fax: (573) 751-7749
Website:
<http://www.dnr.state.mo.us/homednr.htm/>

Montana

MT Department of Environmental Quality
1520 E. 6th Avenue, PO Box 200901
Helena, MT 59620
Phone: (406) 444-2544
Fax: (406) 444-4386
Website: <http://www.deq.state.mt.us/>

MT Natural Resources and Conservation
Department
1625 11th Avenue, PO Box 201601
Helena, MT 59620-1601
Phone: (406) 444-2074
Fax: (406) 444-2684
TTY: (406) 444-6873
Website: <http://www.dnrc.state.mt.us/>

Nebraska

NE Natural Resources Commission
301 Centennial Mall South, PO Box 94876
Lincoln, Nebraska 68509
Telephone: (402) 471-2081
Fax: (402) 471-3132
Website: <http://www.nrc.state.ne.us/>

NE Department of Environmental Quality
1200 N. Street, Suite 400, PO Box 98922
Lincoln, NE 68509-8922
Phone: (402) 471-2186
Fax: (402) 471-2909
Website: <http://www.deq.state.ne.us/>
E-mail: pubinfo@mail.deq.state.ne.us

Nevada

NV Division of Environmental Protection
333 W. Nye Lane, Suite 138
Carson City, NV 89706-0851
Phone: (702) 687-4670
Fax: (702) 687-5856
Toll Free: (800) 992-0900

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New Hampshire

NH Department of Environmental Services
Six Hazen Drive
Concord, NH 03301
Phone: (603) 271-3503
Fax: (603) 271-2867
TTY: (800) 735-2964
Website:
<http://www.state.nh.us/des/descover.htm/>
E-mail: pip@des.state.nh.us

New Jersey

NJ Department of Environmental Protection
401 E. State Street, 7th Floor, East Wing
PO Box 402
Trenton, NJ 08625 -0402
Phone: (609) 292-2885
Fax: (609) 292-7695
Website: <http://www.state.nj.us/dep/>

New Mexico

NM Environment Department
Harold S. Runnels Building
1190 S. St. Francis Drive, PO Box 26110
Santa Fe, NM 87505-4182
Phone: (505) 827-2855
Fax: (505) 827-2836
Toll Free: (800) 879-3421
Website: <http://www.nmenv.state.nm.us/>

New York

NY Department of Environmental
Conservation
50 Wolf Road
Albany, NY 12233
Phone: (518) 457-5400
Fax: (518) 457-7735
Website: <http://www.dec.state.ny.us/>

North Carolina

NC Dept. of Environment, Health, & Natural
Resources
512 North Salisbury Street, PO Box 27687
Raleigh, NC 27604
Phone: (919) 733-4984
Fax: (919) 715-3060
Website: <http://www.ehnr.state.nc.us/>

North Dakota

ND State Water Commission
900 East Boulevard
Bismarck, ND 58505
Phone: 701-328-2750
Fax: 701-328-3696
Website: <http://www.swc.state.nd.us/>

ND Environmental Health Section
1200 Missouri Avenue, PO Box 5520
Bismarck, ND 58506-5520
Phone: (701) 328-5150
Fax: (701) 328-5200
Website: <http://www.health.state.nd.us/>

Ohio

OH Environmental Protection Agency
1800 Watermark Drive, PO Box 1049
Columbus, OH 43216-1049
Phone: (614) 644-3020
Fax: (614) 644-2329
Website: <http://www.epa.state.oh.us/>

OH Natural Resources Department
Fountain Square
1930 Belcher Drive
Columbus, OH 43224-1387
Phone: (614) 265-6565
Fax: (614) 261-9601
Website: <http://www.dnr.state.ohio.us/>

Oklahoma

OK Department of Environmental Quality
707 North Robinson, PO Box 1677
Oklahoma City, OK 73101-1677
Phone: (405) 720-6100
Toll Free: (800) 869-1400
Complaints Hotline: (800) 522-0206
Website: <http://www.deq.state.ok.us/>

Oregon

OR Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
Phone: (503) 229-5696
Fax: (503) 229-6124
Toll Free: (800) 452-4011
TTY: (503) 229-6993
Website: <http://www.deq.state.or.us/>

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Pennsylvania

PA Department of Environmental Protection
Rachel Carson State Office Bldg.
16th Floor
400 Market Street, PO Box 2063
Harrisburg, PA 17101-2063
Phone: (717) 787-1323
Fax: (717) 783-8926
TTY: (800) 654-5984
Website: <http://www.dep.state.pa.us/>
E-mail: depinfo@al.dep.state.pa.us

Rhode Island

RI Department of Environmental
Management
235 Promenade Street
Providence, RI 02908
Phone: (401) 222-6800
Fax: (401) 222-3810
After-Hours Enforcement Hotline: (401) 222-
2284

South Carolina

SC Dept. of Health and Environmental
Control
2600 Bull Street
Columbia, SC 29201
Phone: (803) 734-5360
Fax: (803) 734-4339
Website: <http://www.state.sc.us/dhec/>

SC Environmental and Natural Resources
Department
Rembert C. Dennis Building, PO Box 167
Columbia, SC 29202
Phone: (803) 734-3888
Fax: (803) 734-6951
Website: <http://www.dnr.state.sc.us/>

South Dakota

SD Dept. of Environment & Natural
Resources
Joe Foss Building
523 E. Capital Avenue
Pierre, SD 57501-3181
Phone: (605) 773-3151
Fax: (605) 773-4068
Website: [http://www.state.sd.us/state
/executive/denr/denr.html/](http://www.state.sd.us/state/executive/denr/denr.html/)

Tennessee

TN Department of Environment and Natural
Resources
21st Floor, L&C Tower
401 Church Street
Nashville, TN 37243
Phone: (615) 532-0109
Fax: (615) 532-0120
Toll Free: (888) 891-8332
Website: <http://www.state.tn.us/environment/>

Texas

TX Natural Resource & Conservation
Commission
12100 Park 35 Circle (MC 100)
PO Box 13087
Austin, TX 78711-3087
Phone: (512) 239-4000
Fax: (512) 239-4007
Toll Free: (800) 687-4040
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Washington

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Wisconsin

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Wyoming

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PA Emergency Management Agency
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Local Emergency Planning Committee (LEPC)

Websites

To obtain information on your LEPC, contact your State Emergency Response Commission (SERC) or state environmental agency, or visit the following websites:

Alabama

Madison County EPC (MCEPC)
<http://www.ci.huntsville.al.us/ema/>

Coffee County LEPC
<http://www.snowhill.com/~twilkins/ccepc.html/>

Alaska

Alaska LEPC Chairs
<http://www.ak-prepared.com/lepclist.htm/>

Colorado

Araphoe County EPC
<http://www.sni.net/arapc/>

Jefferson County EPC
<http://www.gablehouse-epel.com/Jeffco1.htm/>

Larimer County LEPC
<http://www.co.larimer.co.us/depts/sherif/emerg6.htm/>

Connecticut

Connecticut LEPCs by Map
<http://www.lepc-len.org/>

Florida

Apalachee Regional Planning Council
<http://www.theapc.org/emermgt/index.html/>

Central Florida Regional Planning Council
<http://lakeland.tsolv.com/~cfrpc/>

District I LEPC
<http://www.wfrpc.dst.fl.us/wfrpc/lepc.htm/>

East Central Florida Regional Planning Council
<http://www.orlinter.com/ecfrpc/const.htm/>

Florida District X LEPC
<http://www.tcrpc.org/lepcndx.htm/>

North Central Florida LEPC
<http://www.afn.org/~lepc/>

South Florida LEPC
<http://www.sfrpc.com/current/menu522.htm/>

Southwest Florida Regional Planning Council
<http://www.swfrpc.org/haz.htm/>

Tampa Bay Regional Planning Council
<http://access.tampabayrpc.org/lepc/lepc.htm/>

District 5 LEPC (Withlacoochee Planning Council)
<http://www.atlantic.net/~wrpc/lepc.htm/>

Illinois

Kane County EPC
<http://www.ameritech.net/users/kcema/kcema1.htm/>

Indiana

Hamilton County LEPC
<http://www.members.iquest.net/~lepc/index.htm/>

Tippecanoe County LEPC
<http://www.nfe.com/tema/lepc/lepc.htm/>

Evansville LEPC
<http://www.evansville.net/eville/services/lepc.html/>

Indiana LEPCs by Map
<http://www.ai.org/ierc/html/inmap.html/>

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Kansas

Labette County LEPC
<http://www.geocities.com/Heartland/Plains/3524/lepc.html/>

Henderson County LEPC
<http://www.dynasty.net/users/hendersonlepc/>

Nelson County Disaster and Emergency Services
<http://www.bardstown.com/~des760/>

Louisiana

List of LA LEPCs & Chairpersons
<http://www.dps.state.la.us/lsp/tess/rtk/98RENEWL.html/>

Beauregard Parish Office of Emergency Preparedness
<http://www.beau.lib.la.us/~oem/>

Ouachita Parish LEPC
<http://www.bayou.com:80/~civil/>

Iberville Parish LEPC
<http://www.parish.iberville.la.us/911/icaer.htm/>

Maine

Oxford County LEPC
<http://www.megalink.net/~oxctyema/lepc.htm/>

Piscataquis County LEPC
<http://www.kynd.com/~pcema/lepc.htm/>

Maryland

Harford County LEPC
<http://www.co.ha.md.us/lepc.html/>

Massachusetts

MA List of LEPCs
<http://www.magnet.state.ma.us/dep/bwp/dhm/tura/turapubs.htm/>

Northern Middlesex Area EPC
<http://www.tiac.net/users/mclatchy/nmaepc/nmaepc.htm/>

Merrimack Valley Regional LEPC
<http://www.shore.net/~mvrlepc/>

City of Peabody LEPC
<http://www.shore.net/~chief/lepc1.htm/>

Michigan

List of MI LEPCs
<http://www.deq.state.mi.us/ead/sara/>

Ingham County LEPC
<http://www.aware.msu.edu/>

Jackson County LEPC
<http://www.co.jackson.mi.us/ems/lepc.htm/>

Monroe County LEPC
<http://www.monroe.lib.mi.us/mcemd/lepc.htm/>

Washtenaw County LEPC
<http://www.co.washtenaw.mi.us/DEPTS/eis/eisresp.htm/>

Missouri

Mid-America LEPC
<http://www.marc.org/lepc.htm/>

St. Charles County LEPC
<http://www.win.org/county/depts/emergenc/sccg275h.htm/>

Missouri LEPCs by Map
<http://www.iland.net/mepa/lepc.html/>

Cooper County LEPC
<http://mo-river.net/community/ema/cooper/lepc/lepc.htm/>

St. Louis County LEPC
<http://www.co.st-louis.mo.us/oem/lepc.HTM/>

Nebraska

Sarpy County LEPC
<http://www.sarpy.com/ema/lepc.htm/>

New Jersey

Fair Lawn LEPC

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<http://hannover.park.org/Guests/Fairlawn/em.html/>

New Mexico

Eddy County LEPC
<http://www.carlsbadnm.com/emereprep/lepc.htm/>

New York

Schenectady County, NY LEPC
<http://ns1.crisny.org/government/capreg/sclepc/index.html/>

Oswego LEPC
<http://www.co.oswego.ny.us/info/newslet/lepc.html/>

Erie County LEPC
<http://www.buffalo.edu/esi/eclepc.htm/>

North Carolina

Rowan County LEPC
<http://www.co.rowan.nc.us/es/lepc/lepc.htm/>

Wake County LEPC
http://www.state.nc.us/Wake/depts/PubSafe/major/lepc/lepc_hp.htm/

Davidson County LEPC
<http://www.co.davidson.nc.us/emfire/lepc.htm/>

Ohio

Ohio LEPC
<http://www.state.oh.us/odps/division/ema/LEPC.htm/>

Athen's County LEPC
<http://www.seorf.ohiou.edu/~xx017/hide/lepc/lepc/>

Franklin County & Columbus LEPC
<http://pie.mhsc.org/FCPHDB/envhlth/lepc000.htm/>

Portage County LEPC
<http://www.pcema.com/pclepc.html>

Ohio State Emergency Coordinators
<http://www.epa.ohio.gov/derr/cepps/cepd/lepc.html/>

Oregon

Oregon LEPC
<http://members.aol.com/oregonlepc/lepc.html/>

Marion County Emergency Management
<http://www.open.org/memanager/>

Pennsylvania

Bucks County LEPC
<http://www.buckslepc.com/>

Berks County LEPC
<http://www.snowhill.com/~twilkins/cclepc.html/>

Mifflin County LEPC
<http://lcworkshop.com/mifflinco/lepc.htm/>

Texas

Grayson County LEPC
<http://members.tripod.com/~Burlena/index-2.html/>

Taylor County LEPC
<http://www.fireweb.com/TaylorLEPC/>

Houston LEPC
<http://www.ci.houston.tx.us/lepc/index.html/>

Fort Bend County LEPC
<http://www.fortbend.lib.tx.us/emerman/lepc/index.htm/>

Cameron County LEPC/Comite Local de Ayuda Mutua (CLAM)
<http://www.triplesoft.com/bisn/trip/jlpress.html/>

Matagorda County LEPC
<http://www.man-net.org/emergency/lepc/lepc.html/>

Harris County: City of Baytown LEPC
<http://www.ci.baytown.tx.us/dept/emer/lepc.txt/>

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Harris County: City of Pasadena LEPC
<http://www.flash.net/~pasalepc/>

Virginia

Fairfax Joint LEPC
<http://members.aol.com/Hazmt96/hmerp.htm/>

Washington

Kings County LEPC
<http://www.metrokc.gov/prepare/hazardou.htm/>

Spokane City/County LEPC
<http://www.spokanecounty.org/emergency/mt/lepc.htm/>

Wisconsin

Ozaukee County Department of Emergency Management
<http://www.execpc.com/~n9unr/ozares/>

Milwaukee County LEPC
<http://www.mksheriff.org/html/emerg/lepc.htm/>

Wyoming

Wyoming Emergency Management Agency
<http://132.133.10.9/>

**2. Emergency Handbook for Food Managers –
Advanced Practice Center**

Emergency Handbook FOR FOOD MANAGERS

This Emergency Handbook was developed as a quick reference guide to provide step-by-step emergency information to food managers and other supervisory personnel at food service establishments. The handbook:

- Addresses both naturally occurring and man-made emergencies.
- Provides prompts for whom to call, first steps to take and subsequent recovery actions to follow after an emergency happens.
- Contains tips on managing longer-term emergencies caused by disruption of utilities and municipal services.
- Offers ongoing food security and emergency preparedness advice.

Large-scale, widespread and catastrophic emergencies will require expert assessment and advice tailored in real time to the specific situation. In such instances, emergency alert systems, news outlets and emergency responders will supplement this handbook as crucial sources of information.

Day in and day out, it is the responsibility of food managers to maintain food safety in their establishments. Food service operations should immediately be discontinued whenever food safety is compromised by an emergency incident. The operation should remain closed until the local health authority grants approval to reopen.

Most food managers will, at some point, encounter the challenges presented by natural disasters and the subsequent emergencies they can cause - power outages, wind damage, flooding and burst pipes, among them. Accidental chemical releases from nearby industries and transportation routes should also be anticipated. In today's atmosphere of heightened homeland security, the potential threats of biological, radiological and chemical terrorism need also be given serious consideration.

This handbook offers practical guidance to food managers in all of these areas.

Bottom line: It's all about keeping our food supply safe.

Much of the information contained in this handbook and accompanying educational materials was obtained from information offered by the American Red Cross, Federal Emergency Management Agency, Massachusetts Department of Public Health, Michigan Department of Agriculture, Minnesota Department of Agriculture, Minnesota Department of Health and Santa Clara County Advanced Practice Center.

Special thanks to Twin Cities metropolitan area food service managers who participated in focus groups and provided input to improve the content of this handbook.

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DO THIS FIRST!

- **Close the facility.**
It's not safe to operate without lights, refrigeration, ventilation or hot water.
- **Write down the TIME when the power outage occurred.**
Your food safety "time clock" starts ticking when the power goes out.
- **Begin taking regular food TEMPERATURE readings.**
 - Have a food thermometer at-the-ready at all times.
 - Check hot foods every hour and cold foods every two hours.
 - Keep a time/temperature record for every item checked in every unit.

(Note: Make copies of Food Temperature Log, Page 21, and use to keep records.)

FOOD SAFETY FACTORS

Watch these four food conditions carefully:

A. Foods being cooked when power went off.

- Do not serve any partially cooked food.
- If power outage is brief (under 1 hour), re-cook food to 165°F when power returns.
- If power is out for more than 1 hour, discard all partially cooked food.



B. Foods being held hot (e.g., 140°F or above in a warmer)

- Once food is below 140°F for more than four hours, discard it.
- If food is below 140°F for less than four hours, rapidly reheat it to 165°F on stove or in oven before serving.

C. Foods being held cold (e.g., 41°F or below in a refrigerator)

- Write down time when food rises above 41°F.
- If food cannot be re-chilled to 41°F within four hours, discard it.

D. Frozen foods that thaw out

- If thawed food does not exceed 41°F for more than four hours, it may be refrozen.
(Note: Refreezing can make some foods watery or mushy).

ROAD TO RECOVERY

After the power comes back on...

1. Decide which foods to discard and which to salvage. Use time/temperature records and food safety factors described here. *(Note: Make copies of Food Temperature Log, Page 21, and use to keep records.)*
2. Verify electrical breakers, utilities and all equipment are in working order.
3. Make sure hot water is being heated adequately for hand and ware washing.
4. Clean and sanitize food equipment and utensils as needed.
5. Call your local health department before reopening.

READY TO REOPEN?

You're ready to reopen only after making sure the food you are serving is safe.

POTENTIALLY HAZARDOUS FOODS (PHF)

Foods to be most concerned about during a power outage include various egg, milk and meat products, cut melons and other perishables. Harmful microorganisms can grow in these foods and cause illnesses when between 41°F and 140°F. Examples:

- Meat and meat dishes
- Mixed dishes (soups, stews, casseroles, pasta/rice)
- Dairy and egg products
(milk, eggs, cream sauces, soft cheeses)
- Cut melons, cooked vegetables
(cut watermelon, honeydew, cooked peas)
- Some desserts (pumpkin pie, custard-filled pastry, cheesecake, meringue, chiffon)



NON-POTENTIALLY HAZARDOUS FOODS (non-PHF)

These foods may be kept at room temperature. Harmful microorganisms usually do not grow on these foods and do not cause illnesses. Discard these foods if quality deteriorates or mold grows on them. Examples:

- Breads, dry flour, dry pasta, dry rice, sugar
- Vinegar-based dressings, ketchup, relish, mustard, condiments
- High-sugar foods (jellies, fruit pies, dried fruit, juices)
- Hard cheeses, solid butter, whole fresh fruits/vegetables

KEEPING COLD FOOD COLD LONGER

- Keep refrigerator doors closed, except while checking temperatures every two hours.
- Cover open coolers with tarps or blankets.
- Avoid adding hot foods to refrigerators.
- Group chilled foods together to reduce warming.

(Note: A closed refrigerator can keep food cold for up to four hours; a closed freezer for up to two days. A half-filled freezer will warm up twice as fast as a full one.)

HELPFUL HINTS

Reduce the impact of a power outage by:

- Canceling incoming food supply shipments.
- Transferring food to off-site cold storage facilities.
- Placing dry ice blocks in refrigerators/freezers. A 25-pound block of dry ice can keep a 10-cubic-foot freezer cold for up to four days.

(Note: Dry ice produces carbon dioxide gas that should be ventilated.)

DO THIS FIRST!

■ DECIDE: Stay open or close?

- Stay open – if flooding or sewage back-up is contained and can be quickly corrected.
- Close – if any food storage, prep or service area is at risk of contamination.

Note: Flood waters and sewage can contain rotting food, feces, chemicals and disease-causing organisms which will contaminate the operation and easily cause food-borne illnesses. If flooding or sewage back-up can not immediately be contained and cleaned up, the facility should be closed until it can.



■ GET HELP

If facility has been flooded:

- Call the city building inspector (to determine safety of structure).
- Call utility companies (to assure safety of gas, electric and telephone).
- Call a sewage-pumping contractor (if septic tank is flooded).
- Call a well contractor (for disinfection of contaminated well water).
- Call your property insurance company (to file a possible claim).
- Call local health department (for response and clean-up advice).

(Note: Keep these contact numbers in the front pocket of this binder)

If sewer has backed up:

- Call a licensed plumber to remove blockages in drain lines.
- Call a sewage-pumping contractor if septic tank is overfilled.
- Call local health department (for response and clean-up advice).

FOOD SAFETY FACTORS

Discard all food that has been in direct contact with flood water or sewage and anything that cannot be washed and disinfected. **WHEN IN DOUBT, THROW IT OUT!**

Discard:

- Foods in porous paper, plastic or cellophane packaging that became wet (e.g. boxes or bags of flour, cereal, mixes, rice, salt).
- Exposed bulk foods, fresh produce, meat, poultry, fish and eggs.
- Containers with screw tops, corks, crowns, caps or pull tabs that became wet (e.g. glass/plastic containers of ketchup, dressings, milk, mayonnaise, sauces, beverages).
- Rusted, pitted, dented, swollen or leaking canned goods.
- Refrigerated or frozen foods that have been over 41°F and hot foods that have been under 140°F for four or more hours.
- Contaminated single-service items.



Salvage:

- All foods not exposed to flood or sewage water
- Undamaged canned goods that have been sanitized
 1. Paper label removed
 2. Washed with soap and water, then rinsed
 3. Sanitized with sanitizing solution, then air dried
 4. Relabeled with permanent marker.

(Note: See Discard/Salvage Guidelines, Page 19)



ROAD TO RECOVERY

Consult professional companies for clean-up services after a flood or sewage back-up inside a building. If restaurant employees are involved in the clean-up work, the following guidelines are important to protect their safety and health.

- Wear eye protection, rubber boots and gloves and outer protective clothing (coveralls or long-sleeve shirts and long pants) when handling items contaminated with flood or sewer water.
- If mold problems are identified, wear a properly fitted filtration mask that carries the N-95 designation from NIOSH.
- Do not walk between contaminated areas and other areas of the establishment without removing protective gloves, footwear and clothing.
- Wash your hands thoroughly after working in the contaminated area.



General cleaning - hard, non-porous surfaces (floors, walls, equipment)

- Remove all sewage, mud, silt or other solids and then remove excess water.
- Use a stiff brush, water, detergent, and disinfectant to scrub floors followed by a clean water rinse. Repeat wash and sanitize steps to prevent mold growth.
- Use fans, heaters, air conditioners or dehumidifiers to help the drying process.
- Clean all hard surfaces (equipment, ice machine, counters, furniture) with hot water and detergent; rinse with water; then disinfect with sanitizing solution.

Wash or discard - linens, mops, apparel (contaminated by event or during clean-up)

- Wash all contaminated items such as linens and clothing used in the clean-up in detergent and hot water.
- Launder or discard mops and any cleaning aids that contacted flood or sewer water.

Discard - porous, soft, absorbent and other uncleanable items

- Discard all damaged food equipment, utensils and linens.
- Discard all soft, porous materials because they are not cleanable, such as:
 - ♦ Contaminated drywall, insulation and paneling.
 - ♦ Contaminated furnishings, carpets, pillows, wall coverings, paper.
 - ♦ Contaminated books, paperwork, menus.
- Discard any exposed item that cannot be effectively disinfected (e.g., toaster).

READY TO REOPEN?

- Call your local health department for a pre-opening inspection.

HELPFUL HINTS

Use CAUTION tape to isolate a small flooded or sewage back-up area to keep customers and employees from walking through, getting exposed to, and spreading contamination.

SANITIZING SOLUTION

Use 1 tablespoon of household bleach (without additives) per gallon of water.

DO THIS FIRST!

- **Uncontrolled fire: Evacuate facility! CALL 911!**
- **Confined fire: Extinguish with on-site extinguisher. Call health department.**

Customer and employee safety is the first priority. Even a small, contained fire can temporarily cause unsafe food service conditions.

- Close the facility, if even temporarily, until food safety can be assured.
- Reopen only after taking necessary recovery steps.

FOOD SAFETY FACTORS

After a fire, many foods may no longer be safe to serve.

- **Discard:**
 - Food in opened containers.
 - Food in paper or cardboard containers.
 - Disposables in opened sleeves or liners.
 - Any food or disposable that shows water or heat damage.
 - Food in screw-type lids.
 - Refrigerated or frozen foods that have been above 41°F for more than 4 hours.
 - Ice in ice bins.
 - Cans that are dented or rusty.
 - Any food that appears damaged. (*Note: See Discard/Salvage Guidelines, Page 19*)
- **Call your local health department for an inspection and assessment.**



ROAD TO RECOVERY

- | | |
|--|--|
| <ul style="list-style-type: none"> ■ Assess impacts on: <ul style="list-style-type: none"> • electrical service • physical facilities • equipment • offensive odors and chemical residues • natural gas ■ Call: <ul style="list-style-type: none"> • local building official
(to determine building safety) • your building insurance company | <ul style="list-style-type: none"> ■ Equipment: <ul style="list-style-type: none"> • evaluate condition • clean and repair • remove unusable equipment • follow all fire, building and health department instructions ■ Clean Up: <ul style="list-style-type: none"> • clean all surfaces • sanitize all food containers and food-contact surfaces |
|--|--|

READY TO REOPEN?

- Check refrigerators (below 41°F) and freezers (below 0°F) before taking new food deliveries.
- Call your local health department for a pre-opening inspection.

HELPFUL HINT

Use a camera or camcorder to document discarded goods for insurance purposes.

DO THIS FIRST!**■ CLOSE THE FACILITY!**

Without adequate and clean hot and cold water you should not continue to operate.

FOOD SAFETY FACTORS**Water service interruption:**

- A broken main water line, malfunctioning well or worn-out water heater can each create unsafe conditions for food establishments.
- Without adequate clean water, employees cannot wash their hands, cook and prepare foods and clean equipment appropriately.
- Rest rooms quickly become health hazards without running water.

Water service contamination:

- A contaminated water supply may contain chemicals, toxins, bacteria, viruses, parasites and other harmful microorganisms that cause human illnesses and can result in death.
- Safe water is essential to operate a safe food business.
- Local health authorities will need to determine the nature and type of the contamination and prescribe appropriate abatement procedures.

ROAD TO RECOVERY

- A food establishment closed because of an interrupted water supply must not reopen until safe water service is restored and the local health department approves reopening.
- Contact your local health department to discuss water system and food facility decontamination procedures.

**READY TO REOPEN?**

After safe water service has been restored:

- Flush pipes and faucets; run cold water faucets for at least five minutes.
- Make sure equipment with water line connections (filters, post-mix beverage machines, spray misters, coffee/tea urns, ice machines, glass washers, dishwashers, etc.) is flushed, cleaned and sanitized according to manufacturers' instructions.
- Run water softeners through a regeneration cycle.
- Flush drinking fountains by running water continuously for at least five minutes.
- Contact your local health department for a pre-reopening inspection.

HELPFUL HINTS

Document the time when a water service disruption occurs or contamination is suspected, then immediately notify the local water utility and health department. Be prepared to provide information, if known, on the cause of the problem.

DO THIS FIRST!

- **During a tornado warning** - A tornado has been sighted.
 - Close facility. Help customers and employees find shelter - away from windows and, ideally, in an enclosed area at the lowest level. Stay away from chimneys and large, unattached items such as refrigerators. Turn on a weather radio or local TV for emergency advisories.
- **During high-wind situations** - Damaging high-velocity winds have been reported in the area.
 - Potential risks include downed live power lines, flying debris, wind-blown broken glass and heavy objects. Close facility and assist customers and employees as you would during a tornado warning (above).
- **During a tornado watch** - The potential for tornadoes is considered imminent,
 - Turn on a weather radio or local TV for emergency advisories. Continue normal operations but remain attentive to changing weather conditions.
- **Before re-entering a storm-damaged building:**
 - Call 911 if a power line is down.
 - Call city building department (to determine safety of structure).
 - Call utility companies (to verify status of gas, electric & telephone).
 - Call local health department (for food safety guidance).
 - Call your insurance company (to begin claim process).
 - Call local emergency management agency (for disaster relief).

(Note: Keep these contact numbers in the front pocket of this booklet's binder.)

FOOD SAFETY FACTORS

Broken glass blown by high winds is a significant food safety concern.

- Carefully examine area for glass fragments that may have impaled food packaging or embedded food, even if not clearly visible. All suspect foods and service items must be discarded.
- **In particular, be especially cautious with:**
 - ◆ any open or unpackaged food, including ice and beverages
 - ◆ porous food packaged in fabric, plastic or paper bags or cardboard cartons
 - ◆ fruits and vegetables
 - ◆ disposable dishware and utensils
 - ◆ filters, purifiers, and beverage cartridges attached to equipment.

ROAD TO RECOVERY

- Wear eye, hand and limb protection to guard against injury from debris.
- Remove debris and place in dumpster.
- Thoroughly vacuum floors and seating areas to ensure removal of hard-to-see glass shards. Double-bag vacuumed waste before discarding.
- Wash and rinse all food contact surfaces, work stations, furniture, utensils, dishes, silverware, glassware, and floors.
- Sanitize all food contact surfaces, work stations, utensils, dishes, silverware, and glassware.

READY TO REOPEN?

- Are utilities restored?
- Is clean-up complete?
- Contact your local health department for a pre-opening inspection.

HELPFUL HINTS

Use a camera or camcorder to document discarded goods for insurance purposes.

WHAT IS IT?

Biological tampering or terrorism involves the deliberate use of a biological agent to spread disease-producing microorganisms or toxins in food, water or the atmosphere. These agents can be powders, liquids or in other forms. A biological agent will almost never cause immediate symptoms, as it takes time for the biological agent to grow or cause its toxic effects.

Anthrax, cholera, plague, smallpox and viral encephalitis are just a few examples of potential bioterrorist-introduced diseases. Botulinum and ricin are two examples of toxins that bioterrorists might choose to use.

Because deliberate contamination of the nation's food supply can happen anywhere along the food supply stream, food managers and workers play key roles in minimizing these potential threats.

DO THIS FIRST!

- Call 911 to report any activity or delivery that seems suspicious.
- Call your local health department if unusual illnesses occur.

FOOD SAFETY FACTORS

Preparedness paves the way to prevention. Develop a good food security system!

- Maintain a current list of local emergency contacts (*See card in binder, front pocket.*)
- Eliminate unauthorized access where food is open, vulnerable and easily targeted.
- Inspect incoming shipments for suspicious items (tampering, unusual powder or liquid).
- Keep precise inventory records.
- Report all unusual activity to the authorities (unauthorized vehicles, people, theft, sabotage, vandalism).
- Assign specific staff to monitor public access to buffet lines, food carts and any open food areas, ensuring foods are safe.

ROAD TO RECOVERY

Clean-up after biological tampering will depend on the biological agent, its form (powder or liquid) and how it was spread (food, air or water) and is determined on a case-by-case basis.

- Keep foods in their original places and seek further guidance from law enforcement and health authorities.
- Follow special instructions on how to safely dispose of items contaminated by biologic agents.

READY TO REOPEN?

- Call your local health department for a pre-opening inspection.

HELPFUL HINTS

Early warning signs may help you recognize a threat:

- Are large numbers of employees or customers becoming ill?
(*Note: Make copies and use Employee Illness Log, Page 20, to track employee illnesses.*)
- Do foods not look, feel or smell right?
- Have unauthorized people been caught doing suspicious things in food preparation areas?
- Have you seen unusual powders or liquids in shipments of food or delivery vehicles?

WHAT IS IT?

A "dirty" bomb is a conventional bomb mixed with a radioactive material. It is not a nuclear weapon. Exposure to radioactive dust discharged by a dirty bomb does not mean a person will develop cancer or other radiation-related diseases. The radiological health risk from the bomb may be very small, but its fear-inducing impact on the public may be very large.

DO THIS FIRST!

- **If a dirty bomb explodes in or next to your facility**
 - Stop operations immediately.
 - Evacuate the building, taking the following precautions:
 - Cover mouths and noses with wet cloths to prevent inhalation of dust or ash while walking to a safe location.
 - Leave the blast site on foot. Walk to a nearby building and call 911 for help.
 - Avoid taking public transit to minimize contamination and exposure to others.
 - Leave door unlocked for emergency personnel. *(Note: Lock registers and take key with you.)*
 - Follow directions of emergency responders.

- **If a dirty bomb explodes several blocks away from your facility**
 - Everyone inside building should stay inside building.
 - Close all windows. Turn off ventilation systems and stay near center of building. *(Note: This will minimize exposure to stray radiation, if there is any.)*
 - Turn on local TV or radio for emergency advisories.
 - Follow directions of local public health, fire and police officials.

FOOD SAFETY FACTORS

Focus on keeping people safe now; you can deal with food safety later.

If you are in the immediate blast and contamination zone, follow instructions from health and emergency response officials on procedures for decontamination of people and property. This may involve removing clothing, showering and other procedures.



ROAD TO RECOVERY

Clean-up, decontamination, salvaging food and reopening a food establishment will depend on the type of explosion plus the form and amount of radiation released. Wait for directions from health and emergency response officials on abatement and clean-up procedures. You should be provided answers to the following:



- Can the building be safely occupied?
- What foods can I salvage? How do I do it? What must I discard?
- How do I dispose of contaminated food/equipment?
- How do I clean the building, food equipment and linens?
- What safety equipment do I need when cleaning?

READY TO REOPEN?

- Call your local health department for a pre-opening inspection.

HELPFUL HINTS

Stay calm - The immediate danger from a dirty bomb is the initial explosion itself. The amount of radiation won't likely be enough to cause severe illnesses.

Distance - By moving away from the source of the blast, you lower your exposure to any radiation.

Shielding - Building materials provide some protection against radioactive dust. People near but not in the immediate area of a dirty bomb detonation are better off staying indoors, right where they are, and taking shelter there rather than trying to evacuate.

Time - Minimize time spent exposed to radiation to reduce risk.

WHAT IS IT?

Any release of a hazardous chemical that threatens public health, contaminates food or water or does harm to the environment is a chemical incident. Examples include a tanker truck rollover and spill, an industrial facility release, or an act of terror in which chemical agents are intentionally released. If these incidents occur at or near your facility, your employees and customers can immediately be endangered.

DO THIS FIRST!

- **If a chemical release occurs inside your building:**
 - Stop operations immediately.
 - Cover mouths and noses with wet cloths to prevent inhalation of chemicals.
 - Evacuate the building immediately.
 - Call 911 to report the release and any terrorist or suspicious activity.
 - Follow directions of emergency responders.
- **If a chemical release occurs in the vicinity of your building:**
 - Everyone inside building should stay inside building.
 - Close all windows. Turn off ventilation systems and stay near center of building. *(Note: This will minimize exposure to wind-carried chemical vapor, if there is any.)*
 - Call 911 to report the release and any terrorist or suspicious activity.
 - Follow directions of local public health, fire and police officials.
 - Turn on local TV or radio for emergency advisories.
 - Stop all food and beverage service - foods and beverages may be contaminated.

FOOD SAFETY FACTORS

- First, protect customers and employees from the direct effects of the chemical release.
- Do not attempt clean-up until chemical-specific guidance is provided by the health department. (Wiping up, in some instances, can do more harm than good.)

ROAD TO RECOVERY

- If you are in the contamination (or "hot") zone, emergency responders or health authorities will provide chemical-specific instructions on how to go about decontamination. This may involve removing clothes, showering, and other procedures.
- Clean-up, decontamination, salvaging food and reopening a food establishment will depend on the type of chemical released. Wait for directions from health and emergency response officials on clean-up procedures. You should be provided answers to the following:
 - ♦ Can the building be safely occupied?
 - ♦ What foods can I salvage? How do I do it? What must I discard?
 - ♦ How do I dispose of contaminated food/equipment?
 - ♦ How do I clean the building, food equipment and linens?
 - ♦ What safety equipment do I need when cleaning?

READY TO REOPEN?

Call your local health department for help and approval to reopen.

- All contaminated food needs to be disposed of in a permitted landfill.
- All discarded food must be documented (also useful for insurance purposes).

HELPFUL HINTS

- Never taste food to determine its safety.
- If a person eats or drinks anything chemically contaminated, call 911.
- If a chemical gets in a person's eyes, call 911.

SANITATION IN AN EMERGENCY

- **Natural or man-made disaster?**
 - ♦ Waste collection and disposal facilities may both be inoperative.
 - ♦ You may be forced to store solid waste on-site until disaster is resolved.
 - ♦ Proper waste storage can help prevent public health hazards.
- **Sanitation workers' strike?**
 - ♦ Waste disposal facilities may continue to operate.
 - ♦ You may be able to bring solid wastes to the disposal facility yourself.
 - ♦ Plan to transport garbage to disposal facility every three to seven days.



FOOD SAFETY FACTORS

- Make sure solid waste continues to be taken from all indoor food storage, preparation and service areas and moved to locations away from those sanitary food areas.
- Solid waste left outdoors without proper security precautions will attract disease-spreading scavengers (insects and other animals).
- Guard against homeless and other transient people trying to salvage garbage containing unsafe food.

SORT AND SEPARATE WASTE

- Separate "spoilables" (food waste, perishables) from "non-spoilables" (empty containers).
- Separate cooking grease from food waste for appropriate disposal.
- Separate all hazardous materials and chemicals for appropriate disposal
(Note: Contact local government for hazardous waste disposal assistance).

STORE WASTE CLEANLY AND SECURELY

- Regularly wash food waste containers.
- Put all food waste in plastic bags; avoid overfilling.
- Tie bag tops to prevent spillage, control odors and prevent insect invasion.
- Put tied bags in dumpsters or trash cans with secure lids to prevent rodent invasion.
- Avoid accumulation of loose trash on ground outside of dumpsters and cans.



CHECK WASTE STORAGE AREAS DAILY

- Watch for spills, leakage and pests daily.
- Make sure containers stay closed and clean.

WHAT'S THE PROBLEM?

Pests often become a problem during other emergency events. Floods, storms, and other disasters can dislocate snakes, rodents, insects and other pests from their normal habitats. Standing water becomes a breeding site for insects and vermin (e.g., mosquitoes). Dead animals become food for other pests (e.g., rodents, flies). Sewage and flood contamination can lead to flies and rodents carrying diseases. Lack of garbage pickup can also provide food for insects, rodents and vermin. They can damage food, supplies and buildings, repel customers and cause food-borne illnesses.

HOW DO I EXCLUDE PESTS?

It's all about closing off every access point.

- Keep doors closed. Install door closers and bottom door sweeps.
- Keep dock doors closed and seal gaps around them.
- Keep windows closed and put screens on windows when possible.
- Seal all holes, cracks and crevices in the building walls, foundation and roof.
- Seal around pipes and install screens over ventilation pipes and ducts on roof.
- Train employees to be alert about these access points and to spot pests.
- Inspect all incoming shipments of goods and delivery vehicles for pests.
- If you find pests in food, reject the shipment or discard the food.
- If you find pests in your building, contact a licensed pest control company to eliminate them immediately; then clean the area.

HOW DO I AVOID ATTRACTING PESTS?

Remove sources of food and habitat, and clean and maintain the facility.

- Eliminate food sources inside the building (clean often, clean right away).
- Eliminate food sources outside the building (especially around dumpster).
- Eliminate habitat inside the building (keep floors cleaned, items off ground).
- Eliminate habitat outside the building (mow grass often, remove leaves, nests, weeds and debris, especially that which is very close to the building).
- Eliminate water sources around the building (ditches, pails, pools, cracks).
- Keep trash cans and dumpsters closed and keep the dumpster area clean.
- Remove old, rotting fruit and vegetables inside building to eliminate breeding sites.

WHERE CAN I GET EXPERT ASSISTANCE?

Seek outside help so you can use all the tools available to control pests.

- Consider an overall plan, called Integrated Pest Management (IPM), that looks at all pests, food, habitat, breeding cycles, pesticides and traps.
- Pest control companies can help in the following areas:
 - ♦ Traps (live traps, glue boards, mechanical traps, monitoring traps, etc.).
 - ♦ Bait to attract and eliminate pests.
 - ♦ Assessing building integrity, food sources and habitat elimination.
 - ♦ Pesticides, tracking powders and the proper use of these chemicals.
 - ♦ University Extension Services and health departments also have IPM information.

(Note: Pesticide use in food establishments is highly regulated. Only specified pesticides may be used; many may be applied by licensed, trained applicators only. Always read pesticide labels.)

ROAD TO RECOVERY

After a disaster is over, you will want to keep close watch over pest activity.

- Immediately after a disaster, pest activity often peaks, then gradually diminishes.
- Even in non-disaster times, you will encounter some pest activity. It is good business to always monitor pest activity in your operation to prevent problems.
- Do not rely solely on pesticides to solve your pest problems. Practice IPM.
- Prevention and early warnings are the keys to solving pest problems.

HELPFUL HINTS

Implement a cleaning program

- Create a master cleaning schedule.
- What - Clean all surfaces, equipment, tools.
- Who - Assign each task.
- When - Daily during shift; at night at end of shift.
- How - Use specific cleaning instructions.
- Monitor cleaning - Is it getting done? Correctly?



Deny pests access

Pests come in through two main routes:

- Brought in with contaminated deliveries or delivery vehicles
- Through openings in building, windows, doors
 - ♦ Mice, rats, insects use drain pipes like highways going through a facility.
 - ♦ Rodents burrow through degrading masonry.
 - ♦ Rats can squeeze through a hole the size of a quarter; mice through one the size of a dime.

Why pests should concern you

- Rodents chewing electrical wires set many fires.
- Flies spread dysentery, typhoid and cholera.
- Rodents spread salmonellosis and rat-bite fever.
- Mosquitoes spread malaria, encephalitis, yellow fever, West Nile virus and more.

When you seal holes & cracks

- Make sure the seals are tight.
- Use durable materials to seal holes, such as concrete or sheet metal, as rodents will chew through soft materials. Steel wool can serve as a temporary seal.

DO THIS FIRST!

- **DECIDE: Close or stay open?**

- Close if the safety of the food or facility cannot be maintained.
- Stay open if the safety of the food and facility can both be maintained.
(*Note: By staying open, your business can help bring some order to the uncertainties faced by employees and customers - so long as you can continue to provide safe food and a safe place to serve it.*)

- **GET HELP**

- Call local building officials for help determining building safety.
- Call local health department to answer any food safety questions.

FOOD SAFETY FACTORS

- **Food workers**
 - ♦ All food workers must practice strict hand washing, maintain good hygiene and be without boils, sores, cuts, or any communicable disease.
 - ♦ Maintain employee illness logs (*see page 20*).
 - ♦ Report customer illness complaints to health department.
 - ♦ Train employees on any changes in procedure due to the emergency to ensure public health protection.
- **Food and storage**
 - ♦ Use water only from a safe and approved source.
 - ♦ Carefully examine all sealed food containers and utensils before using. If perishable foods become warm - do not use. If canned foods are damaged, puffed or leaking - do not use.
 - ♦ Do not accept food or water from unapproved (i.e., home prepared) or unknown sources where quality control cannot be assured. Inspect all incoming items to detect spoilage or contamination.
 - ♦ Store fruits, vegetables, cooked foods, prepared foods and ready-to-eat items above raw meat to prevent cross contamination.
 - ♦ Store all items at least six inches off the ground in insect- and rodent-proof containers.
 - ♦ Keep all chemicals away from food and utensils. Label all chemical containers.
- **Food preparation**
 - ♦ Provide hand washing stations with soap, paper towels, and nail brush.
 - ♦ Eliminate bare-hand contact with ready-to-eat food items (provide gloves, tongs, scoops).
 - ♦ Separate areas should be set up for hand washing, food preparation, and washing and sanitizing utensils.
 - ♦ Prepare quantities sufficient for immediate use. Leftovers must be avoided if refrigeration is inadequate.
 - ♦ Use single-service eating and drinking utensils when possible. Avoid customer self-service.
- **Temperature controls**
 - ♦ Cook all foods thoroughly - meat, fish, poultry should be well done.
 - ♦ Keep hot foods hot at 140°F or above. Quickly reheat all foods to 165°F or hotter.
 - ♦ Keep cold foods cold at 41°F or below.
 - ♦ Limit food items being cooled. Follow the food code closely for fast and safe cooling.
- **Cleaning and sanitation**
 - ♦ All food preparation and serving areas should be cleaned and sanitized. (*Sanitizing solution, see page 5.*)
 - ♦ Properly wash (clean water & detergent), rinse, and sanitize (sanitizing solution) all utensils and equipment.
 - ♦ Wash and sanitize cutting boards, knives, and other utensils after each use to prevent cross contamination.
 - ♦ Use test strips to monitor sanitizer concentrations.
 - ♦ Properly dispose of all solid and liquid waste - frequently.
 - ♦ Control insects and rodents in all food-related areas. Use only approved pesticides and control measures.
 - ♦ Maintain sanitation and regularly clean inside and outside the establishment.

DO THIS FIRST!

- **DECIDE: Is building safe to enter and reoccupy?**
 - Call: city building department (to determine safety of structure)
 - Call: utility companies (gas, electric & telephone)
 - Call: local health department
 - Call: your insurance company

(Note: Keep these contact numbers in the front pocket of this booklet's binder)

FOOD SAFETY FACTORS

- **Contaminated foods that must be discarded:**
 - ♦ Any open or unpackaged food, including ice and beverages
 - ♦ Porous foods
 - ♦ Uncleanable packaged food, including:
 - Crown-cap bottles & jars (require opener to remove top)
 - Cork-top bottle & jars
 - Screw-top bottles & jars
 - ♦ Food in fabric, plastic or paper bags
 - ♦ Food in cardboard cartons
 - ♦ Produce, fruits and vegetables if contaminated
 - ♦ Potentially hazardous foods held between 41° - 140°F for more than 4 hours. (See page 3.)
- **Foods that may be salvaged:**
 - ♦ Unopened cans if:
 - Labels are intact. However, labels must be removed and then the can re-labeled with a permanent marker prior to cleaning and sanitizing
 - Cans are not dented along any seam.
 - Cans do not show any signs of swelling, leaking or loss of vacuum.
 - Cans are not rusty.
- **Non-food items:**
 - ♦ Discard contaminated disposable dishes, paper products, utensils, etc.
 - ♦ Discard filters, purifiers, and beverage cartridges attached to equipment.

(Note: Refer to Discard/Salvage Guidelines, Page 19.)



ROAD TO RECOVERY

- Place all discarded foods in plastic bags.
- Tie bags securely to contain food waste, control odors and prevent insect infiltration.
- Place secured bags in dumpsters or trash cans with tight fitting lids.
- Remove disaster debris and place in dumpster.
- Flush all water and equipment drain lines (use bleach).
- Wash, rinse and sanitize all food contact surfaces, work stations, utensils, dishes, silverware, glassware, and walls. (Sanitizing solution, see page 5.)
- Disinfect floors, floor-sinks, furniture, and walls as necessary. (Wash, rinse and sanitize with bleach solution.) (Sanitizing solution, see page 5.)
- Are utilities safely back on?
- Is clean-up complete?
- Has all damaged or suspect food been removed from the site?
- Are toilets and hand-wash stations equipped with soap, nailbrush and paper towels?
- Are refrigeration units maintaining food temperatures at or below 41°F?
- Are hot holding units maintaining food temperatures at or above 140°F?

READY TO REOPEN?

Call your local health department for help and approval to reopen.

<p style="text-align: center;">MANAGEMENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> The food facility has a food security plan. <input type="checkbox"/> A record is kept of employee illness reports. <input type="checkbox"/> Personnel have received food security training. <input type="checkbox"/> Personnel know what to do if they encounter a product tampering incident. <input type="checkbox"/> In case of an emergency, personnel know whom to contact: <ul style="list-style-type: none"> <input type="radio"/> Internal: Person in Charge <input type="radio"/> Police (911) <input type="radio"/> Fire (911) <input type="radio"/> Local Public Health Department 	<p style="text-align: center;">PERSONNEL</p> <ul style="list-style-type: none"> <input type="checkbox"/> Employment applications are required. <input type="checkbox"/> Employment references are checked. <input type="checkbox"/> Personnel receive food security training when they are hired. <input type="checkbox"/> Food preparation areas are restricted to authorized personnel. <input type="checkbox"/> Employees are not allowed to bring personal items into food preparation areas. <input type="checkbox"/> Employee sick leave policy encourages individuals to report illnesses and not work when they have gastrointestinal symptoms or a communicable disease. <input type="checkbox"/> Customers are restricted to public areas. <input type="checkbox"/> Contractors are restricted to their work required areas. <input type="checkbox"/> Contractors and vendors are monitored while they are at the food facility.
<p style="text-align: center;">PRODUCTS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Products are purchased from reputable, commercial suppliers. <input type="checkbox"/> Purchase records are maintained for product trace back and recalls. <input type="checkbox"/> Products arrive at the food facility in clean and secure transport vehicles. <input type="checkbox"/> Products are never left unsupervised on the loading dock. <input type="checkbox"/> Products are inspected for tampering prior to preparation or service. <input type="checkbox"/> The facility has guidelines for handling product tampering incidents. <input type="checkbox"/> Food items are prepared by personnel trained in food safety and food security procedures. <input type="checkbox"/> Drinkable water is used for rinsing and for preparing food items. <input type="checkbox"/> Salad bars and self-serve carts are closely monitored by staff to prevent contamination and product tampering. 	<p style="text-align: center;">PROPERTY</p> <ul style="list-style-type: none"> <input type="checkbox"/> Doors opening onto the loading dock are kept locked when not in use. <input type="checkbox"/> All truck shipments (incoming and outgoing) are monitored by food service employees. <input type="checkbox"/> Products are inspected upon delivery. <input type="checkbox"/> There is good lighting for all high-risk areas at the facility. <input type="checkbox"/> Hazardous chemicals including any pesticides are kept locked in a secure area. <input type="checkbox"/> High-risk areas are marked "employees only" and access is limited to employees who work in the area. <input type="checkbox"/> There is a key control system for store keys. <input type="checkbox"/> Consider operating security cameras, as appropriate, in high-risk and high-traffic areas.

Discard	Salvage
<p>Any food or service item that has been contaminated or come in contact with water, sewage, smoke, fumes or chemicals. This includes:</p> <ul style="list-style-type: none"> • Fresh perishables - produce, meat, poultry, fish, dairy products and eggs. • Opened containers and packages • Vulnerable containers with peel-off, waxed cardboard, cork or screw tops or paraffin seals such as glass or plastic containers of catsup, dressing, milk, horseradish, mayonnaise, pop, beer, sauces, etc. • Soft, porous packaging - food in cardboard boxes, paper, foil, plastic, and cellophane such as boxes or bags of food, cereal, flour, sugar, rice, salt, etc. • Dry goods - spices, seasoning and extracts, flour, sugar and other staples in canisters. • Single service items - plates, cups, utensils, lids, etc. 	<p>Frozen foods if stored in a sealed walk-in or cabinet freezer (<i>no water, smoke, fumes or chemical infiltration</i>) and where ambient temperature has remained below 41°F.</p>
<p>Canned and bottled items should be discarded:</p> <ul style="list-style-type: none"> • If charred or near the heat of the fire. • If rusted, pitted, dented, swollen or leaking. 	<p>Disinfect undamaged cans and bottles that have no heat or water damage and are free from dents, bulging, leaks or rust.</p> <ul style="list-style-type: none"> • Paper label removed • Washed with soap and water, then rinsed • Sanitized with sanitizing solution, then air dried (<i>Solution, see page 5.</i>) • Relabeled with permanent marker.
<p>Refrigerated or frozen food must be discarded if:</p> <ul style="list-style-type: none"> • In contact with sewage, water, smoke, fumes or chemical seepage. • Above 41°F for four hours or more. • Frozen and then thawed for four or more hours. • Deteriorated in quality or has an unusual appearance, color or odor. 	<p>If fire, flood or sewage back-up has been effectively contained:</p> <ul style="list-style-type: none"> • Food in areas unaffected by smoke, fumes, water, heat, fire suppression chemicals, floodwater or sewage back-up may be salvaged. • Seek the advice of your local health inspector.
<p>Potentially Hazardous Food (PHF) must be discarded if it has been in the "Temperature Danger Zone" (41°F - 140°F) for more than 4 hours. PHFs include:</p> <p>Meat and mixed dishes</p> <ul style="list-style-type: none"> • Beef, veal, lamb, pork, poultry, fish, seafood, luncheon meats, hot dogs, hams, etc. • Soups, stews, casseroles or similar dishes containing meats, pasta, rice, eggs or cheeses <p>Eggs and dairy products</p> <ul style="list-style-type: none"> • Eggs or egg products, ice cream, yogurt • Milk, cream, buttermilk, cream-based foods or soups • Soft cheeses such as cream, ricotta, brie, etc. <p>Desserts - Pies, cakes and pastries containing custard, cheese, chiffon, meringue or pumpkin</p> <p>Cut Melons & Cooked Vegetables - Watermelon, musk or honeydew melons, cooked peas or corn or beans</p>	<p>Non-PHFs may be kept at room temperature, though quality may deteriorate, including:</p> <ul style="list-style-type: none"> • Bread, rolls, muffins, dry cakes • Solid butter or margarine • Hard cheese - cheddar, parmesan, etc. • Fresh, uncut fruits & vegetables • Fruit or vegetable juices, dried fruit, fruit pies • Canned goods • Dry foods - flour, pasta, rice, etc. • High sugar foods - honey, jellies • Acid-based condiments - ketchup, mustard
<p>Partially cooked food must be discarded if without power for more than one hour.</p>	<p>Partially cooked food may be quickly reheated to 165°F if without power for less than one hour. When in doubt, throw it out.</p>
Other than food: Discard	
<p>Discard any exposed materials that cannot be effectively cleaned and sanitized, including toasters and other food equipment, linens, furnishings, carpets, etc.</p>	

EMERGENCY READINESS: STAFF TRAINING RECORD

(Photocopy and use this form to track staff training.)

LESSON	DATE OF TRAINING	WHO ATTENDED	INSTRUCTOR INITIALS
1 Power outage			
2 Flood or sewage back up			
3 Fire			
4 Water service disruption or contamination			
5 Biological tampering and terrorism			
6 Dirty bomb			
7 Chemical incident			
8 Solid waste collection disruption and pest control			
9 Maintaining food safety in a disaster			
10 After-incident clean-up: discard or salvage?			
11 Food security			

B. Water

- 1. Drinking Water Emergency Notification Fact Sheet – US EPA**



Drinking Water Public Notification

Public notification changes – Quick Look

EPA published revised public notification regulations on May 4, 2000 (65 FR 25981), as required by the 1996 SDWA Amendments. These changes make notification easier and more effective for:

Consumers - Faster notice in emergencies, fewer notices overall, notices that are easier to understand.

The new public notice requirements direct water suppliers to let people know within 24 hours of any situation that may immediately pose a health risk. Formerly, water systems had up to 72 hours to provide this notice. This change will make it easier for consumers to avoid drinking contaminated water. Water suppliers can now also combine notices for less serious problems and make notices shorter and easier to understand.

States & water systems - concise standard language and notices.

The new public notification requirements make the standard health effects language more concise. The new rule also gives water systems a standard set of procedures to follow, to make notices easier for water systems to issue, while providing better information for consumers.

Public notification helps to ensure that consumers will always know if there is a problem with their drinking water. These notices immediately alert consumers if there is a serious problem with their drinking water (e.g., a boil water emergency). For less serious problems (e.g., a missed water test), water suppliers must notify consumers in a timely manner. Public notice requirements have always been a part of the Safe Drinking Water Act; EPA recently changed these requirements to make them even more effective.

Water suppliers across the United States consistently deliver drinking water that meets EPA and state standards. Systems also test regularly for approximately 90 contaminants to make sure that no contaminant is present at levels which may pose a risk to human health. Water suppliers serving the same customers year-round summarize this information in an annual report which provides consumers with a snapshot of their everyday water quality.

Unfortunately, water quality can sometimes change. Despite the efforts of water suppliers, problems with drinking water can and do occur. When a problem with drinking water happens, the people who drink the water have a right to know what happened and what they need to do. The public notice requirements of the Safe Drinking Water Act require water suppliers to provide this notice.

As water suppliers test their water, they may discover that levels of certain contaminants are higher than the standards set by EPA or states. This might happen due to a change in local water conditions, heavy rainstorms, or an accidental spill of a hazardous substance. Water suppliers may also fail to

take one or a series of their required samples. Any time a water supplier fails to meet all EPA and state standards for drinking water (including missing required samples or taking them late), the water supplier must inform the people who drink the water.

How quickly do water systems have to send notices?

Depending on the severity of the situation, water suppliers have from 24 hours to one year to notify their customers after a violation occurs. EPA specifies three categories, or tiers, of public notification. Depending on what tier a violation situation falls into, water systems have different amounts of time to distribute the notice and different ways to deliver the notice:

Immediate Notice (Tier 1): Any time a situation occurs where there is the potential for human health to be immediately impacted, water suppliers have 24 hours to notify people who may drink the water of the situation. Water suppliers must use media outlets such as television, radio, and newspapers, post their notice in public places, or personally deliver a notice to their customers in these situations.

Notice as soon as possible (Tier 2): Any time a water system provides water with levels of a contaminant that exceed EPA or state standards or that hasn't been treated properly, but that doesn't pose an immediate risk to human health, the water system must notify its customers as soon as possible, but within 30 days of the violation. Notice may be provided via the media, posting, or through the mail.

Annual Notice (Tier 3): When water systems violate a drinking water standard that does not have a direct impact on human health (for example, failing to take a required sample on time) the water supplier has up to a year to provide a notice of this situation to its customers. The extra time gives water suppliers the opportunity to consolidate these notices and send them with annual water quality reports (consumer confidence reports).

What information must be included in a notice?

All notices must include:

- A description of the violation that occurred, including the potential health effects
- The population at risk and if alternate water supplies need to be used
- What the water system is doing to correct the problem
- Actions consumers can take
- When the violation occurred and when the system expects it to be resolved
- How to contact the water system for more information
- Language encouraging broader distribution of the notice

How often do violations occur that require a public notice?

Serious water quality problems are rare. Approximately 25 percent of the nation's 170,000 public water suppliers violate at least one drinking water standard every year and are required to provide public notice. In fiscal year 1998, there were more than 124,000 of these violations. Ninety percent of these violations are due to the failure of water systems to complete all sampling in a timely manner. About one percent of the time, water systems incur a violation for a serious situation where notification must be provided immediately (Tier 1).

EPA 816-F-00-021

May 2000

2. Emergency Disinfection of Drinking Water – US EPA



EMERGENCY DISINFECTION OF DRINKING WATER

USE ONLY WATER THAT HAS BEEN PROPERLY DISINFECTED FOR DRINKING, COOKING, MAKING ANY PREPARED DRINK, OR FOR BRUSHING TEETH

1. Use **bottled water** that has not been exposed to flood waters if it is available.
2. If you don't have bottled water, you should **boil water** to make it safe. Boiling water will kill most types of disease-causing organisms that may be present. If the water is cloudy, filter it through clean cloths or allow it to settle, and draw off the clear water for boiling. **Boil the water for one minute**, let it cool, and store it in clean containers with covers.
3. If you can't boil water, you can **disinfect it using household bleach**. Bleach will kill some, but not all, types of disease-causing organisms that may be in the water. If the water is cloudy, filter it through clean cloths or allow it to settle, and draw off the clear water for disinfection. **Add 1/8 teaspoon (or 8 drops)** of regular, unscented, liquid household bleach **for each gallon of water**, stir it well and let it stand for 30 minutes before you use it. Store disinfected water in clean containers with covers.
4. If you have a well that has been flooded, the water should be tested and disinfected after flood waters recede. If you suspect that your well may be contaminated, contact your local or state health department or agriculture extension agent for specific advice.

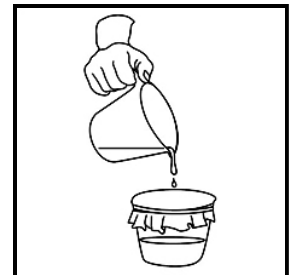
(U.S. federal agencies and the Red Cross recommend these same four steps to disinfect drinking water in an emergency. Please, read the text below for important details about disinfection.)

More information about disinfection

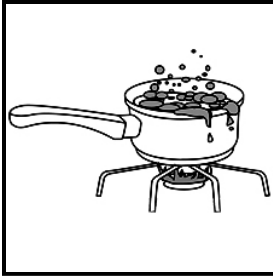
In times of crisis, follow advice from local officials. Local health departments or public water systems may urge consumers to use more caution or to follow additional measures than the information provided here.

Look for other sources of potable water in and around your home. When your home water supply is interrupted by natural or other forms of disaster, you can obtain limited amounts of water by draining your hot water tank or melting ice cubes. In most cases, well water is the preferred source of drinking water. If it is not available and river or lake water must be used, avoid sources containing floating material and water with a dark color or an odor. Generally, flowing water is better quality than stagnant water.

Examine the physical condition of the water. When emergency disinfection is necessary, disinfectants are less effective in cloudy, murky or colored water. Filter murky or colored water through clean cloths or allow it to settle. It is better to both settle **and** filter. After filtering until it is clear, or allowing all dirt and other particles to settle, draw off the clean and clear water for disinfection. Water prepared for disinfection should be stored only in clean, tightly covered, containers, not subject to corrosion.

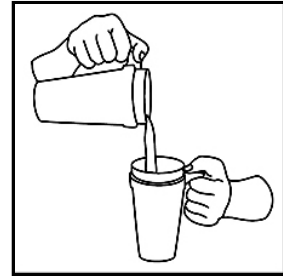


Choose a disinfection method. Boiling and chemical treatment are two general methods used to effectively disinfect small quantities of filtered and settled water.



Boiling is the surest method to make water safe to drink and kill disease-causing microorganisms like *Giardia lamblia* and *Cryptosporidium*, which are frequently found in rivers and lakes.

These disease-causing organisms are less likely to occur in well water (as long as it has not been affected by flood waters). If not treated properly and neutralized, *Giardia* may cause diarrhea, fatigue, and cramps after ingestion. *Cryptosporidium* is highly resistant to disinfection. It may cause diarrhea, nausea and/or stomach cramps. People with severely weakened immune systems are likely to have more severe and more persistent symptoms than healthy individuals. Boil filtered and settled water vigorously for one minute (at altitudes above one mile, boil for three minutes). To improve the flat taste of boiled water, aerate it by pouring it back and forth from one container to another and allow it to stand for a few hours, or add a pinch of salt for each quart or liter of water boiled.

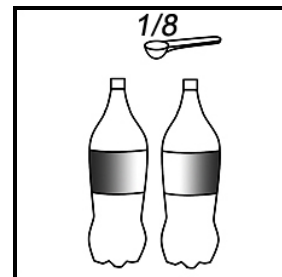


If boiling is not possible, chemical disinfection of filtered and settled water collected from a well, spring, river, or other surface water body will still provide some health benefits and is better than no treatment at all.



When boiling is not practical, certain chemicals will kill most harmful or disease-causing organisms. For chemical disinfection to be effective, the water must be filtered and settled first. Chlorine and iodine are the two chemicals commonly used to treat water. They are somewhat effective in protecting against exposure to *Giardia*, but may not be effective in controlling more resistant organisms like *Cryptosporidium*. Chlorine is generally more effective than iodine in controlling *Giardia*, and both disinfectants work much better in warm water.

- **You can use a non-scented, household chlorine bleach that contains a chlorine compound to disinfect water.** Do not use non-chlorine bleach to disinfect water. Typically, household chlorine bleaches will be 5.25% available chlorine. Follow the procedure written on the label. When the necessary procedure is not given, find the percentage of available chlorine on the label and use the information in the following table as a guide. (Remember, 1/8 teaspoon and 8 drops are about the same quantity.)

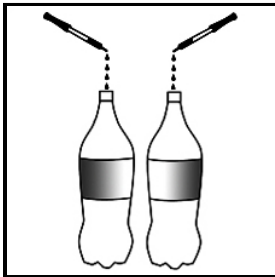


Available Chlorine	Drops per Quart/Gallon of Clear Water	Drops per Liter of Clear Water
1%	10 per Quart -- 40 per Gallon	10 per Liter
4-6%	2 per Quart -- 8 per Gallon (1/8 teaspoon)	2 per Liter
7-10%	1 per Quart -- 4 per Gallon	1 per Liter

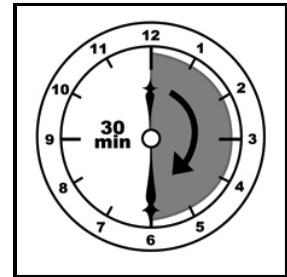
(If the strength of the bleach is unknown, add ten drops per quart or liter of filtered and settled water. Double the amount of chlorine for cloudy, murky or colored water or water that is extremely cold.)

Mix the treated water thoroughly and allow it to stand, preferably covered, for 30 minutes. The water should have a slight chlorine odor. If not, repeat the dosage and allow the water to stand for an additional 15 minutes. If the treated water has too strong a chlorine taste, allow the water to stand exposed to the air for a few hours or pour it from one clean container to another several times.

- **You can use granular calcium hypochlorite to disinfect water.** Add and dissolve one heaping teaspoon of high-test granular calcium hypochlorite (approximately $\frac{1}{4}$ ounce) for each two gallons of water, or 5 milliliters (approximately 7 grams) per 7.5 liters of water. The mixture will produce a stock chlorine solution of approximately 500 milligrams per liter, since the calcium hypochlorite has available chlorine equal to 70 percent of its weight. To disinfect water, add the chlorine solution in the ratio of one part of chlorine solution to each 100 parts of water to be treated. This is roughly equal to adding 1 pint (16 ounces) of stock chlorine to each 12.5 gallons of water or (approximately $\frac{1}{2}$ liter to 50 liters of water) to be disinfected. To remove any objectionable chlorine odor, aerate the disinfected water by pouring it back and forth from one clean container to another.
- **You can use chlorine tablets to disinfect filtered and settled water.** Chlorine tablets containing the necessary dosage for drinking water disinfection can be purchased in a commercially prepared form. These tablets are available from drug and sporting goods stores and should be used as stated in the instructions. When instructions are not available, use one tablet for each quart or liter of water to be purified.










- **You can use tincture of iodine to disinfect filtered and settled water.** Common household iodine from the medicine chest or first aid kit may be used to disinfect water. Add five drops of 2 percent U.S. or your country's approved Pharmacopeia tincture of iodine to each quart or liter of clear water. For cloudy water add ten drops and let the solution stand for at least 30 minutes.



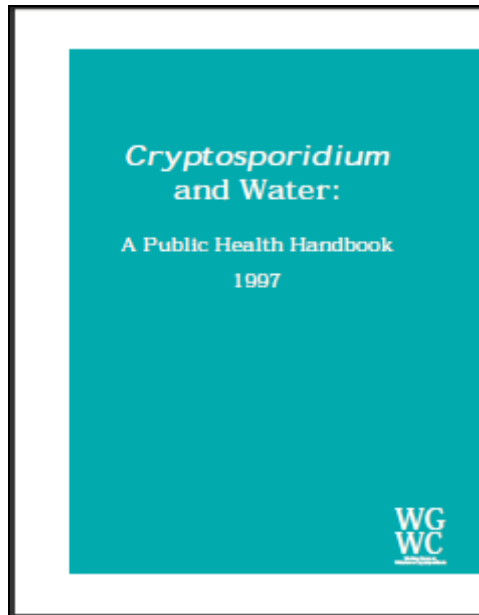
- **You can use iodine tablets to disinfect filtered and settled water.** Purchase commercially prepared iodine tablets containing the necessary dosage for drinking water disinfection at drug and sporting goods stores. Use as stated in instructions. When instructions are not available, use one tablet for each quart or liter of filtered and settled water to be purified.

ONLY USE WATER THAT HAS BEEN PROPERLY DISINFECTED FOR DRINKING, COOKING, MAKING ANY PREPARED DRINK, OR FOR BRUSHING TEETH

Summary of Key Points:

<p>Filter murky or colored water through clean cloths or allow it to settle. It is better to both settle <i>and</i> filter.</p>	
<p>Boiling is the surest method to make water safe to drink and kill disease-causing microorganisms like <i>Giardia lamblia</i> and <i>Cryptosporidium</i>, which are frequently found in rivers and lakes.</p>	
<p>To improve the flat taste of boiled water, aerate it by pouring it back and forth from one container to another and allow it to stand for a few hours, or add a pinch of salt for each quart or liter of water boiled.</p>	
<p>When boiling is not practical, certain chemicals will kill most harmful or disease-causing organisms. Chlorine (in the form of unscented bleach) and iodine are the two chemicals commonly used to treat water.</p>	
<p>You can use a non-scented, household chlorine bleach that contains a chlorine compound to disinfect water. (Remember, 1/8 teaspoon and 8 drops are about the same quantity.)</p>	
<p>You can use tincture of iodine to disinfect filtered and settled water. Common household iodine from the medicine chest or first aid kit may be used to disinfect water.</p>	
<p>Tincture of iodine. For cloudy water add ten drops and let the solution stand for at least 30 minutes.</p>	

3. Cryptosporidium in the Water – Center for Disease Control



This document is provided by the U.S. Centers for Disease Control and Prevention (CDC) ONLY as an historical reference for the public health community. It is no longer being maintained and the data it contains may no longer be current and/or accurate.

The [CDC Healthy Water](http://www.cdc.gov/healthywater/) website is the most current source of information on safe water, waterborne diseases, best practices and all other water-related information. It should be consulted first at: <http://www.cdc.gov/healthywater/>

Persons with disabilities experiencing problems accessing this document should contact CDC-INFO at CDC-INFO@cdc.gov, 800-232-4636 or the TTY number at (888) 232-6348 and ask for a 508 Accommodation PR#9342. If emailing please type "508 Accommodation PR#9342" without quotes in the subject line of the email.

Cryptosporidium and Water:

A Public Health Handbook

1997

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For additional copies of this handbook, write to:

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Executive Summary

Introduction

1- Coordination and Preparation

2- Epidemiologic Surveillance

3- Clinical Laboratory Testing

4- Evaluating Water Test Results

Drinking Water Sources, Treatment, and Testing

Environmental Sampling Methods

Issuing and Rescinding a Boil Water Advisory

5- Outbreak Management

Outbreak Assessment

News Release Information

Frequently Asked Questions

Protocols for Special Audiences and Contingencies

6- Educational Information

Preventing Cryptosporidiosis: A Guide for Persons With HIV and
AIDS

Preventing Cryptosporidiosis: A Guide for the Public

Preventing Cryptosporidiosis: A Guide to Water Filters and
Bottled Water

7- Recreational Water

Appendix

Selected Articles

Key Words and Phrases

Figures A-F

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The draft materials for this handbook were developed through the work of multiple task forces and individuals whose names appear at the beginning of each chapter/section. The draft documents were then reviewed and revised based on comments from representatives* of the entire "Working Group on Waterborne Cryptosporidiosis". The task force for development of information for state and local health officers** designed the handbook, assembled additional published and unpublished informational materials, and prepared the introductory and transitional chapters needed to produce a cohesive reference document for health departments and the drinking water industry.

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EXECUTIVE SUMMARY

This public health handbook, *Cryptosporidium* and Water, was developed by the Working Group on Waterborne Cryptosporidiosis (WGWC) -- a multi-disciplinary group composed of representatives from the national Centers for Disease Control and Prevention (CDC), U.S. Environmental Protection Agency (EPA), Food and Drug Administration (FDA), U. S. Department of Agriculture (USDA), state and local health departments, the drinking water industry, and organizations representing the concerns of immunocompromised persons. The handbook was developed to assist local health departments and water utilities in preparing for and responding to reports of *Cryptosporidium* oocysts in tap water or in a community's source of drinking water (river, lake, well). A new, federally mandated water monitoring regulation goes into effect in 1997 that requires water utilities to test drinking water sources once a month for *Cryptosporidium*. *Cryptosporidium* will likely be found in the water supplies of many communities; such findings may result in many unnecessary boil water advisories if test results are not carefully interpreted.

The WGWC encourages health departments and water utilities to work as a team to develop appropriate health risk assessment protocols and public responses to findings of *Cryptosporidium* in drinking water supplies. The common occurrence of *Cryptosporidium* in sources of drinking water throughout the nation, and the lack of reliable water testing methods for determining if a sufficient number of viable oocysts are present in water to cause an outbreak, combine to make this a challenging task. Because cryptosporidia are resistant to the chlorine disinfectants commonly used in water treatment, the WGWC encourages water utilities to optimize their filtration methods to reduce the risk of tap water contamination. It should be recognized, however that *Cryptosporidium* oocysts may occasionally get through even well operated filters. Although the handbook focuses primarily on *Cryptosporidium* in drinking water and, to a lesser extent, recreational water, most of the principles outlined in the handbook can be applied equally well to the prevention and investigation of other waterborne pathogens.

The WGWC recommends the formation of a local *Cryptosporidium* Response Task Force that includes, at a minimum, representatives from the health department, water regulatory authority, and water utility. Guidance is provided in the handbook for organizing such a task force, evaluating the water system's vulnerability to *Cryptosporidium* (e.g., source water protection and water treatment methods) *before* there is public concern about the risk of waterborne cryptosporidiosis. The handbook also provides guidelines on assessing and developing health department capabilities for detecting a *Cryptosporidium* outbreak, and developing a coordinated emergency response plan. Also reviewed are some of the complex issues that should be addressed before issuing or rescinding a boil water advisory.

If *Cryptosporidium* is detected in your drinking water, a significant portion of health department and water utility staff time will be consumed by media and public inquiries. The WGWC encourages you to prepare for such inquiries well in advance of a crisis. One effective approach is to develop a good working relationship with key media health/science writers. Let them know in advance that your community, like most communities in the

United States, can expect to find *Cryptosporidium* occasionally in source water when mandatory *Cryptosporidium* testing is initiated. The health department, water utility, and the public will further benefit if the media are provided with a clear understanding of the many problems surrounding interpretation of water testing results for *Cryptosporidium*. Making the extra effort to work with the media before there is a crisis can reduce the chances of articles being published or broadcast with inaccurate, misleading, or frightening information about cryptosporidiosis and *Cryptosporidium* test results. Practical tips for working with the media as well as informational materials are provided in the handbook.

Guidance is also provided for initiating epidemiologic studies to determine if an outbreak is occurring, for conducting a systematic investigation of the water supply to determine if drinking water is a likely source of a suspected outbreak, as well as for assessing the size of an outbreak, geographic distribution of ill persons, and specific risk factors for infection. A sample data collection form and epidemiologic questionnaire are provided to facilitate this process. Emergency telephone numbers are provided for state health departments, CDC, and EPA, to contact for assistance in interpreting preliminary water quality data or investigating a possible outbreak.

Within the various chapters you will find information on *Cryptosporidium* and cryptosporidiosis that can be used for developing public education materials and preparing news media releases. This includes emergency water treatment guidelines such as *boiling water for 1 minute*. Informational materials for immunosuppressed persons (e.g., those with AIDS) at risk of developing life-threatening cryptosporidiosis are also provided. For immunosuppressed persons who want to try to avoid all municipal tap water and commercial products made with tap water, guidance is given for selecting an effective home-use water filter, bottled water, soft drinks, and juices. For the laboratorian, tables are provided that summarize information about the types and sources of diagnostic *Cryptosporidium* tests for water and stool, along with a discussion of their strengths and weaknesses. An appendix includes selected published articles, a listing of key words and phrases, and an index to make the handbook user-friendly.

We hope you will find this handbook helpful. We are interested in receiving comments or questions and welcome suggestions for improving it. Research on *Cryptosporidium* is growing rapidly, and we anticipate that some sections of this handbook will need to be updated. Please let us know if you would like to receive updated materials by filling out and mailing the postpaid postcard enclosed in the front pocket. We welcome your input.

Dennis D. Juranek
Centers for Disease Control and Prevention
for the Working Group on Waterborne Cryptosporidiosis

Cryptosporidium is a protozoan parasite affecting the gastrointestinal tract of humans and animals. It is shed in the feces in the form of an “oocyst,” which has a hard shell to protect it from the environment.

Infections may be asymptomatic or may cause watery diarrhea and abdominal cramps. The organism is transmitted by the fecal-oral route. Outbreaks have most commonly been associated with person-to person (day care center) and waterborne (drinking and recreational water) modes of spread. Foodborne and animal-(especially calves) to-person spread has also been documented.

At this time, there is no specific drug therapy proven to be effective against *Cryptosporidium*, but the immunocompetent person will usually recover from illness within 2 weeks. Immunocompromised individuals, however, may be unable to clear the parasite and suffer chronic and debilitating illness.

Waterborne *Cryptosporidium* outbreaks have occurred in both large and small communities, with the largest outbreak occurring in Milwaukee, Wisconsin in 1993, affecting an estimated 403,000 people. Such outbreaks have caused major disruption to residents, businesses, and government. Infection with the *Cryptosporidium* organism may also have contributed to the premature deaths of immunosuppressed individuals in these outbreaks.

Because of this, the finding of *Cryptosporidium* oocysts in many drinking water sources (rivers, lakes, and reservoirs), and occasionally even in treated water, has been a source of considerable concern to drinking water and public health officials, as well as to the public and the news media.

Ordinary water disinfection methods cannot kill *Cryptosporidium* oocysts, and even the best filtration units may allow a few organisms to pass through in treated water. However, the health risks associated with the consumption of public drinking water supplies contaminated with small numbers of oocysts is unknown.

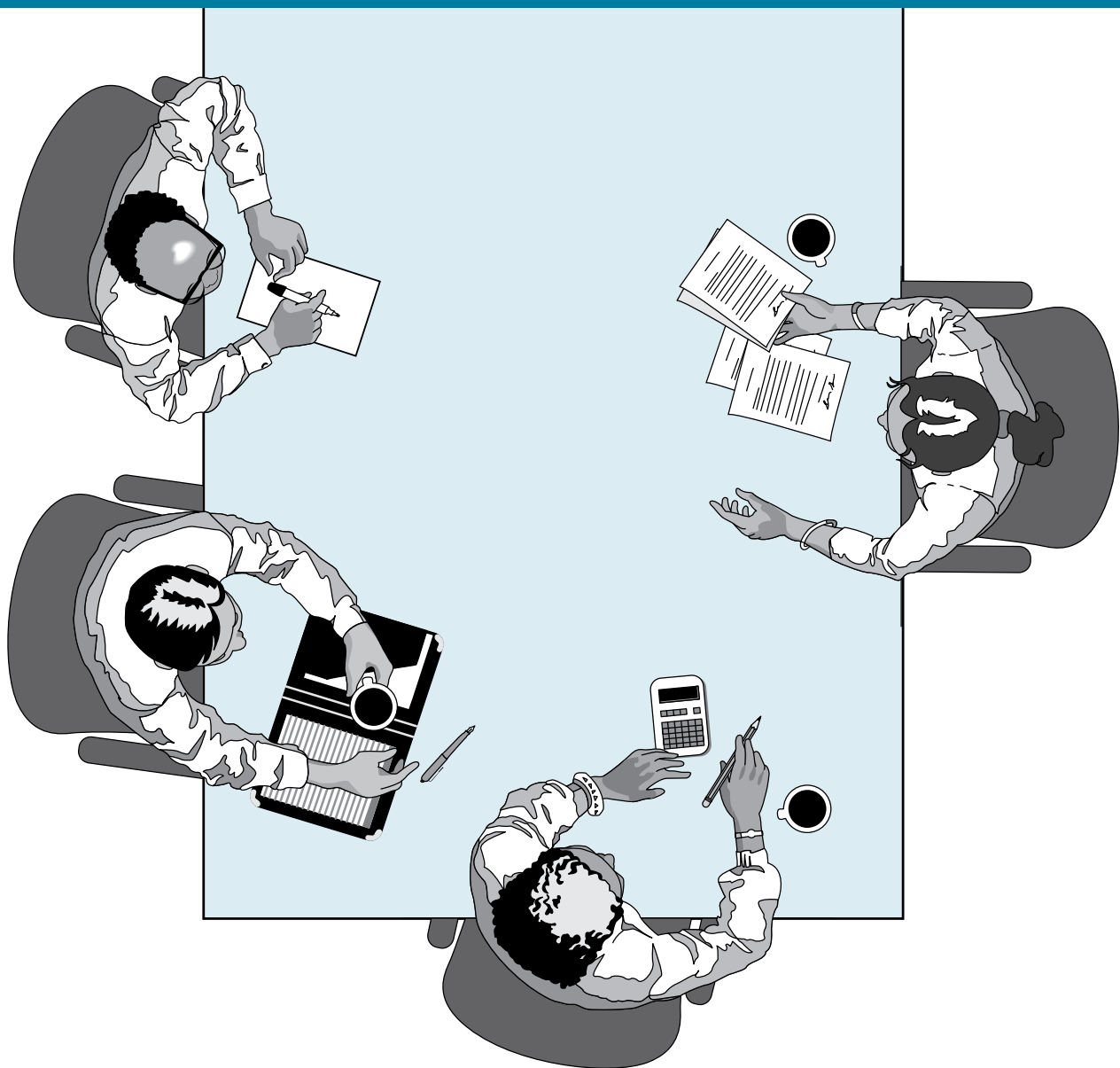
A new Environmental Protection Agency (EPA) collaborative project study, the Information Collection Rule (ICR), will begin in 1997 and will require municipal water systems serving over 100,000 people to test their source waters for *Cryptosporidium*. If the number of cryptosporidia exceed a specified limit, water systems will be required to test their treated water as well. The data obtained through this study will assist the EPA in the development of water quality standards relating to *Cryptosporidium*. Testing results will be available to the public and news media and it is very likely that concern will result from reports of positive findings. Health officials will be looked upon to be knowledgeable and to provide guidance in the event of a real or perceived health threat by this organism. In smaller communities, *Cryptosporidium* has also proven to be an important concern, and health officials in such localities also need to be aware of any *Cryptosporidium* testing, public or private.

This handbook has been developed by the Centers for Disease Control and Prevention (CDC) Working Group on Waterborne Cryptosporidiosis to guide health officials in formulating a response to findings of *Cryptosporidium* in drinking water. Working Group membership represents a wide range of agencies and disciplines, including the CDC, EPA, Food and Drug Administration, U.S. Department of Agriculture, drinking water industry, state and local health officials, laboratory professionals, medical and environmental researchers, and community action groups.

In addition to assisting you in your response to real or perceived threats from waterborne *Cryptosporidium*, it is our intention that this handbook will also prove useful to you in responding to other waterborne disease threats.

CHAPTER 1

Coordination and Preparation



Chapter 1 - Coordination and Preparation

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COORDINATION AND PREPARATION

I. Coordination - Forming a Task Force

Need for a Task Force

In many localities, drinking water issues involve jurisdiction held jointly by several different governmental agencies, as well as nongovernmental groups. Therefore, it is highly recommended that local task forces be formed, with participation by all related groups. Before water testing yields a positive test for *Cryptosporidium*, these task forces should be created to formulate sound and timely responses, as such a finding could cause great public concern and scrutiny. Similar task forces should be established at the state or territorial level.

Benefits of Forming a Task Force:

- All appropriate officials work together and are included in the decision-making process.
- Community groups with related interests can be included in the overall process.
- Standardized, coordinated response tactics are thought out and developed, thereby avoiding unwarranted adverse economic and political impacts.
- A coordinated response and a unified public health message promote public trust.
- Relationships and response strategies developed can be used as a basis to manage other waterborne disease threats.

Task Force Membership

The task force can be composed of an Executive Group and an Advisory Group.

The **Executive Group** can include official agency representatives and technical experts who are immediately responsible for drinking water safety and disease outbreak investigations, as well as a person responsible for public communications. You may already have similar individuals chosen to handle responses to natural disasters.

We suggest the following:

- Health department representative (e.g., infectious disease epidemiologist, communicable disease specialist, community or public health nurse or other health officer)
- Water regulatory representative (health department and/or environmental protection agency)
- Local or regional drinking water EPA representative
- Water utility representative (public or private water supplier agency)
- Public information officer or other designated spokesperson

*Before water testing yields a positive test for *Cryptosporidium*, joint task forces should be created to formulate sound and timely responses to such a finding.*

The **Advisory Group** might include one or more representatives from as many of the following as is possible and appropriate, meeting with the Executive Group on a regular or periodic basis:

- State or regional health agency representative
- Agricultural representative (if watershed issues are involved)
- Clinical laboratory representative
- Immunosuppressed persons' group representative
- Local community group representative
- Local medical association representative
- Local hospital/HMO association representative
- Representative of local Red Cross chapter or other emergency aid agency
- Member(s) of association(s) representing affected industries (e.g., restaurants, hotels, food and water industries)
- Representatives of local day care and nursing home businesses
- University/research expert

There are various ways in which the Executive Group and the Advisory Group could work together, depending on what is appropriate for a particular situation and locale. The interaction could work as follows.

The Executive Group meets several times to get organized (i.e., go over bylaws, rules and regulations; identify areas of responsibility; identify resources; identify and begin to assess technology issues). The Executive Group could also identify groups and/or individuals to invite to serve on the Advisory Group and identify potential projects for Advisory Group participation (i.e., developing notification lists for immunosuppressed persons' groups or health care providers) The Advisory Group will probably also come up with their own ideas for projects and could split off into committees to work on these.

The Executive Group will most likely meet on a frequent and regular basis, and the Advisory Group will meet with them on a regular, but less frequent basis. Participation by certain Advisory Group members on specific Executive Group projects might dictate their meeting with the Executive Group regularly for a time. During combined Executive and Advisory Group meetings, the Executive Group would report to the Advisory Group on Executive Group project progress, and request input on ideas and plans.

II. Preparation

Task force activities

Executive Group becomes familiar with the local water system's sources of water, treatment methodologies, monitoring tests, and the federal and state standards for drinking water quality.

- Reviews current water treatment methodologies and capabilities with the water utility representative.
- Assesses vulnerability of the local drinking water to contamination of source water and to treatment failure. (See Chapter 4)

- Determines what water testing results will necessitate follow-up and task force response.
- Discusses participation in the Partnership for Safe Water, a joint program developed by the EPA, state water supply agencies, and the water industry to optimize water treatment performance, utilizing existing facilities and staff.

Executive and Advisory Groups assess the status of local epidemiologic surveillance for cryptosporidiosis and other diarrheal diseases, and make improvements if necessary.

- Encourage hospital and other clinical laboratories to screen stool samples for *Cryptosporidium*.
- Educate local physicians about *Cryptosporidium* and encourage them to screen diarrheal cases for *Cryptosporidium*.
- Institute mandatory reporting of cryptosporidiosis cases.
- Develop ongoing epidemiologic surveillance to detect outbreaks of diarrheal disease as soon as possible. (See Chapter 2)
- Determine what epidemiologic findings will necessitate follow-up and response.

Executive and Advisory Groups develop an Action/Response Plan to follow in the event that water utility and/or epidemiologic data indicate that drinking water may be a potential health risk. This plan should be sufficiently detailed to ensure notification of all involved groups and agencies, as well as the media. Section III provides assistance on how to develop such a plan.

Executive Group identifies a governmental chain of command to be notified and gain approval from if a water-related emergency occurs. A suggested form for facilitating this process is provided in the appendix, as Figure A. This chain of command may include:

- Immediate supervisors of Executive Group members (first level)
- Department and agency heads/commissioners
- Mayor, other municipal officials
- Governor, state officials
- Others, as appropriate for locale
- Other municipal or county officials

Executive and Advisory Groups determine who will be the spokesperson for communications if a public announcement is needed. Scientific experts on the Executive or Advisory Groups in the areas of health and water quality should also be selected to provide technical backup for the main media spokesperson and to do interviews if necessary. An agency public information office or equivalent can be used to direct questions to appropriate experts. These experts should be aware of which types of questions they should not answer, but rather should refer back to the information office. Back-up spokespersons who have been equally trained should be designated.

Executive and Advisory Groups develop and have available public education materials on cryptosporidiosis. (See Chapter 6)

Executive and Advisory Groups identify the major water users in your locale that would be affected by a waterborne emergency and list, with fax, telephone numbers, and e-mail addresses the contact persons to notify in the event of such an emergency. A suggested form to facilitate this process is provided in the appendix, as Figure B. Some types of major users are listed below.

- Hospitals, nursing homes, day care centers, residential care facilities
- Food processing plants
- Restaurants, hotels
- Correctional facilities
- Bottling facilities
- Schools
- Airports
- Stadia and arenas
- Facilities using automatic ice-making equipment

Executive and Advisory Groups determine back-up or alternate sources of drinking water for use in case of an emergency.

- Communicate with state or local emergency response management coordinators to see if they have already developed emergency drinking water supply plans.
- Contact nearby military and national guard installations about their emergency water treatment capabilities.
- Identify bottled water suppliers and determine their capabilities to serve as a substitute water source in the event of an emergency.
- Encourage institutions (hospitals, schools, long-term care facilities) to have plans for alternative water sources.

Prepare for public and media use educational materials on effective water filters and suitable types of bottled waters. (See Chapter 6)

III. Cryptosporidium action/response plan

The development of a comprehensive *Cryptosporidium* action/response plan will help to organize, standardize, and streamline your response to a possible finding of *Cryptosporidium*, as well as to ensure that all the proper groups, agencies, and the public are notified and kept informed of events and decisions. An example of a sequential plan of action is outlined below and in a flow chart on page 7. The narrative describing this plan corresponds with the flow chart.

1. Water supplier or health department detects cryptosporidiosis “trigger event.”

- A “trigger event” is any situation that may stimulate discussion of the need for a boil water advisory. This may include: violation of the total coliform rule or the surface water treatment rule turbidity standard, a water filtration breakdown or other such water treatment problem, an unusual number of customer complaints about water quality, a laboratory finding of pathogens in finished water, significant interruption in key water treatment or monitoring, or an increased reporting of diarrheal illness or cryptosporidiosis cases to the local health department that indicates a possible drinking water source.

2. Event reported by water supplier or health department to Executive Group for further evaluation.

- Executive Group members immediately alert first level of governmental chain of command (i.e., their immediate supervisors), that a trigger event has been reported.

3. Executive Group evaluates trigger event.

- Discusses the incident/findings reported and all relevant information.
- Determines if further information is needed to analyze event thoroughly.

4. Executive Group recommends a response.

- Reviews possible responses with appropriate members of Advisory Group.
- Selects appropriate action (See #6 below).
- Summarizes data in a clear and concise manner and explains why the plan of action was chosen.

5. Executive Group sends concise summary to immediate supervisors for notification and approval.

6. Executive Group carries out action/response plan - four possible responses:

- A. Health risk no longer suspected
Event determined to be false alarm — no further action necessary.
- B. Health risk indeterminate at current time
Continue heightened monitoring or surveillance for agreed-upon period and report information back to Executive Group members for further evaluation. Executive Group will terminate trigger event response if there are no significant further findings, or recommend an increased level of action/response if findings warrant. Some groups may want to issue a Level I notice (described below) at this point.
- C. Health risk suspected—notifications released. (This is only a presentation of options—health risks are rarely defined clearly, and local realities should be the deciding factor.)

Level I—health risk possible for immunocompromised persons

- Issue notice directed to immunocompromised persons that an increased level of suspicion exists regarding the possible presence of parasites in the water supply. Refer to Chapters 4 and 6 for specific educational information you can provide.
- Activate communications systems developed with Advisory Group members to provide notification to immunosuppressed individuals.
- Do not issue general public precautions, because no risk for the general public is suspected at this time.
- Increase epidemiologic surveillance; request that health care providers, staff at clinical laboratories and hospitals, and pharmacists be on the alert for evidence of any increase in diarrheal disease. Test for *Cryptosporidium* and other suspected pathogens when appropriate.

Level II—health risk possible for general population

Become familiar with your local water system's sources of water, treatment methodologies, monitoring tests, and the federal and state standards for drinking water quality.

- Strongly recommend water use precautions for immunocompromised individuals; utilize communications systems developed with Advisory Group to reach these populations with disease prevention information.
- Advise the public that they may also wish to take these precautions.
- Institute more active epidemiologic surveillance — telephone physicians, pharmacists, clinical laboratories, hospitals, and nursing homes to inquire about any evidence of increase in diarrheal disease and/or *Cryptosporidium* findings.

D. Health risk strongly suspected—issue boil water advisory

- Announce that all persons should boil water before consumption.
- Issue specialized informational materials for restaurants, hospitals, dental offices, establishments that sell fountain drinks, etc. (See Chapter 5)
- Institute active surveillance of hospitals, clinical laboratories, physicians' offices, pharmacies, and nursing homes for any evidence of increase in diarrheal disease and cryptosporidiosis. (See Chapters 2 and 4)
- Strongly recommend *Cryptosporidium* testing for all diarrheal illnesses— make health department laboratory available for testing at no cost if possible.
- Set up temporary telephone “hotline” for the public, businesses, and health professionals, if possible. (See Chapter 5)
- Issue media release regarding boil water advisory. (See Chapter 5) Ensure that materials for special audiences (see Chapter 5) are also given to the media for distribution.

7. Executive Group re-evaluates situation frequently.

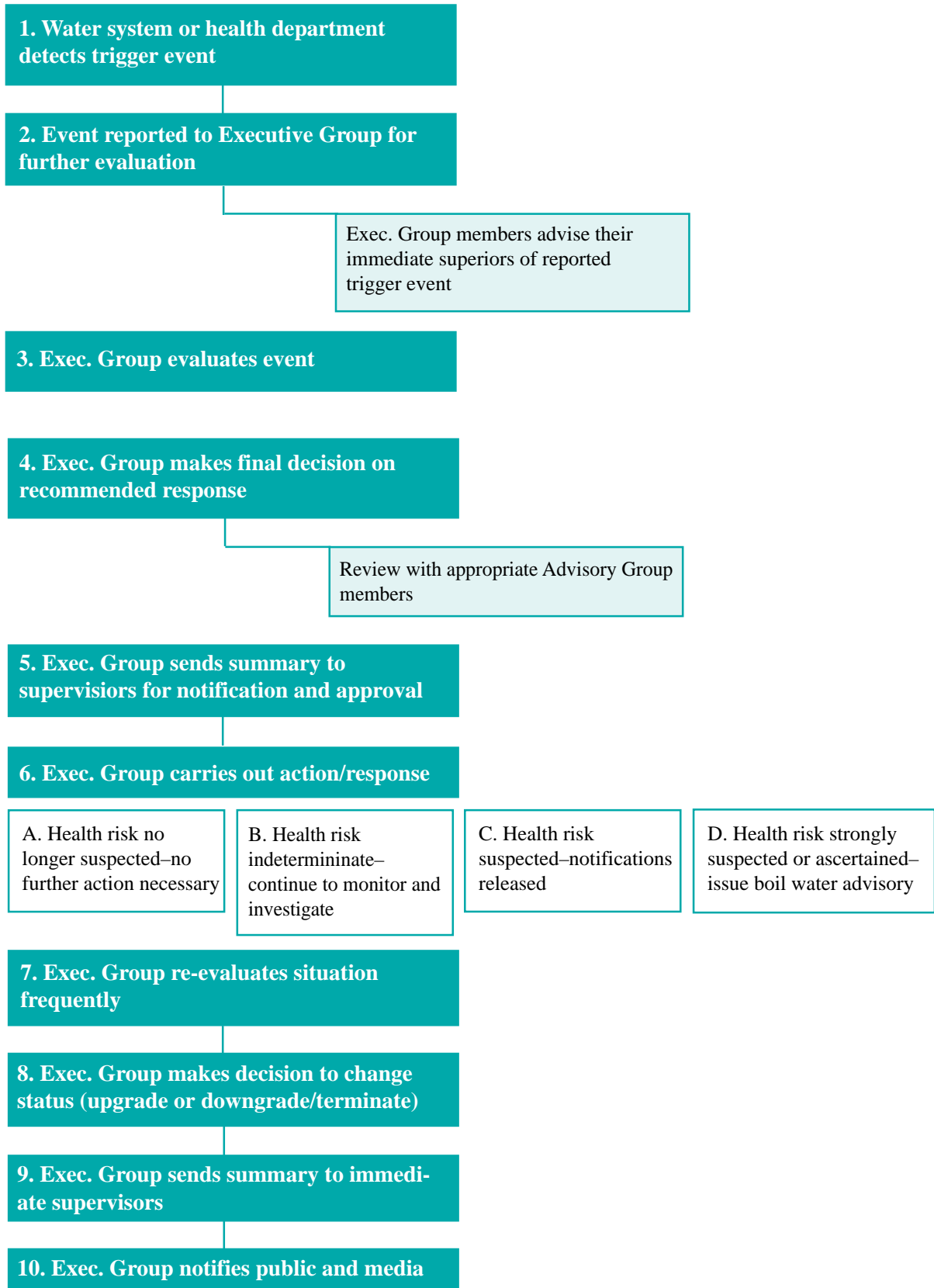
8. Executive Group makes decision to change status of action/response plan.

- Reviews recommended change with appropriate members of Advisory Group.
- Upgrades action/response to higher level.
- Downgrades warning or terminates boil water advisory.
- Summarizes data in a clear and concise manner and explains why changes in status were made.

9. Executive Group sends summary to immediate supervisors for notification and approval.

10. Executive Group notifies the public and media about any changes in recommendations.

Flow Chart for Action/Response Plan



IV. Preparing a News Media Response

If *Cryptosporidium* is found in your drinking water supply and/or you have an outbreak of cryptosporidiosis in your community, your task force will need to work with the local media to educate the public about cryptosporidiosis without causing undue concern. The experience of other communities in this regard has taught a number of important lessons.

Be Prepared:

The best time to prepare for managing the media and the public in a cryptosporidiosis outbreak or a finding of oocysts in your drinking water is *before* a crisis occurs. Do *not* wait to prepare your response until there is an outbreak. In preplanning, you should take these steps, working with the other agencies that will be involved.

- Set your goals and objectives. Be very clear about what you want the outcome of your interaction with the media to be—what message you want the media to convey to the public.
- Identify your personnel resources.
- Identify a spokesperson(s) for managing the media, and plan how to restrict media access. You may wish to funnel all media inquiries through your office of public affairs, or equivalent, to different spokespersons with expertise in different areas. If you do this, each spokesperson should be aware of which type of questions he or she should answer and which types should be referred to the office of public affairs or to other spokespersons. Designate back-up spokespersons who have been equally trained.
- Bear in mind that, particularly in more competitive media markets, reporters will try to find other sources besides your spokesperson(s) and media releases. Reporters may seek comments from advocacy groups representing the HIV-positive community or similar stakeholders. These stakeholders may have their own, different political agenda to pursue with the media. It is *not* realistic to expect the news media to reproduce your institution's comments or news release verbatim and without comment.
- Plan a joint information center. At this one locale, public information officers and spokespersons from the different agencies can work together to coordinate a response to the media. Any agency that would be involved in issuing a boil water advisory should be represented in this center. If technical questions specifically on the water in question are deferred to the water utility, answers to these questions should be coordinated with the overall message coming from your joint group. *Keep everyone involved in handling any aspect of your crisis “in the loop.”*
- Think about the questions you would face from the media in a “cryptosporidiosis event” before called upon to answer them. You may want to write up answers to sample questions; writing such questions and answers will help you focus your responses before you have to give them. An example is provided in Chapter 5. You might also wish to prepare some “fill in the blank” responses for media questions that will occur in different waterborne disease contexts. These statements can be pre-approved, then used immediately in the first moments of a crisis.
- Get to know the reporters and editorial boards who would be involved in coverage of such an event. If they are sophisticated regarding cryptosporidiosis and trust you, they will be far more likely to report on cryptosporidiosis in a calm and accurate manner. You may want to keep a record of helpful and responsible reporters and how to contact them. An example of how to do this is provided in the appendix, as Figure C.

Have a Plan:

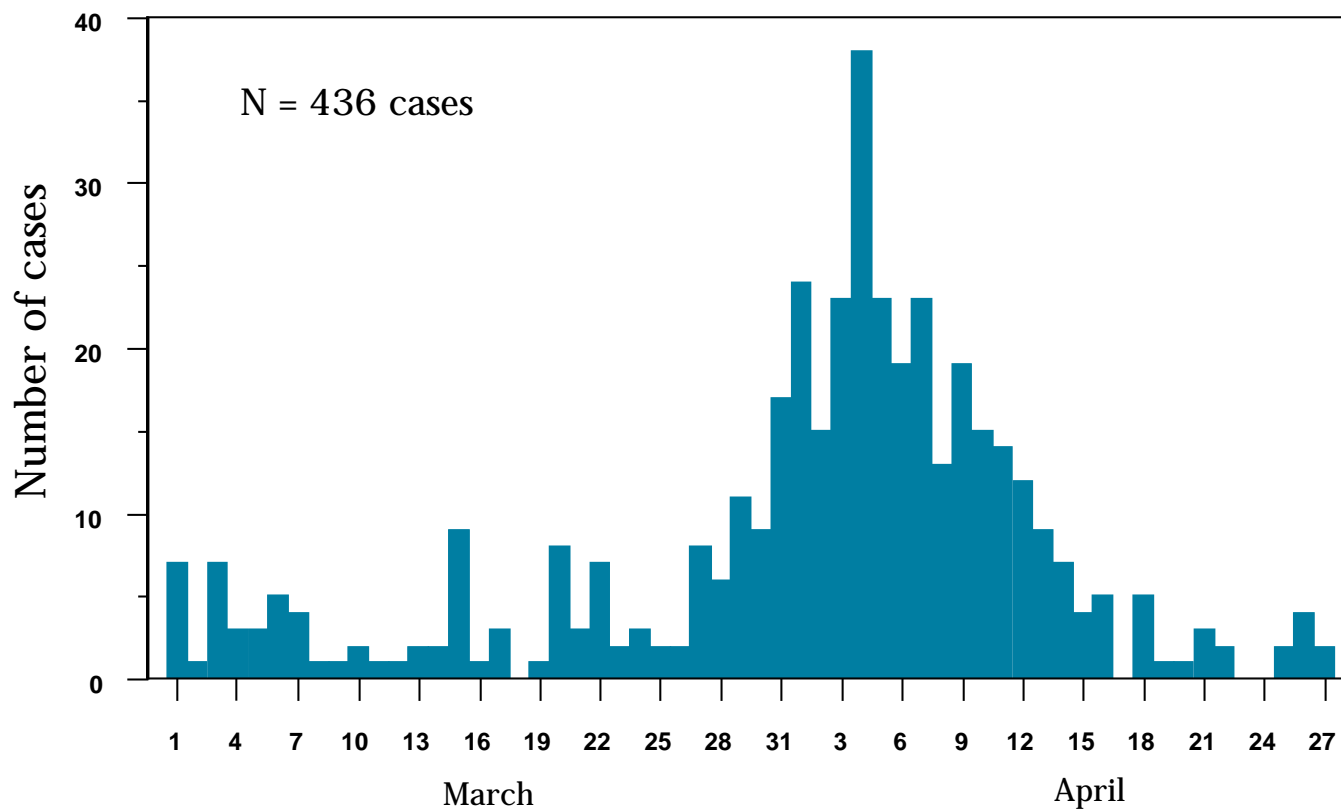
- Identify the target audiences you must reach in the event of a waterborne disease outbreak. Material for specific audiences and contingencies is included in Chapter 4.
- Write a set of key communication points with the cooperation of the other agencies that all of your spokespersons will use. Try to limit this to as few points as possible.
- “Exercise” your plan. Like any other emergency plan, your media plan can benefit, and be utilized better, if you practice it with mock emergencies.
- Build in an evaluation component. Be ready, when your crisis has passed, to review how you handled it and how you could improve your performance.

General Tips for Spokespersons:

- You should be well-informed, apolitical, good at working with the media and direct and nontechnical in answering questions. Spokesperson(s) must be accessible. If the media cannot reach you they will turn to someone else for answers to their questions.
- If appropriate and possible, have a prepared statement to read or to issue.
- Always reply truthfully, simply, and directly to the media but answer only the question asked. “Yes” or “no” answers may need qualification. Unless you have a specific point to make that a reporter did not bring up, limit your comments to direct answers. Prepare and practice for the most difficult questions you are likely to be asked. You will need to be able to respond quickly and with authority to any question the media might ask. It may help to note that *Cryptosporidium* is a pathogen that has been in water for many years and is only now becoming better understood and detected.
- Be concise. Establish your key message at the beginning of your interview or press encounter. Do not overload the media with excessive or overly complex information. Simply state and reinforce one or two important points.
- Admit it when you don’t know the answer or don’t have conclusive data on the subject. If you are asked hypothetical questions by the media, defer them, answering only fact-based inquiries. Do not try to hedge by using phrases such as “I think,” “maybe,” or “probably not.”
- Be sure to present your data in context. For instance, if oocysts are found in your finished water at a level that is normal and consistent with national findings, be sure to say it is consistent with national findings and therefore not a cause for alarm. Only advise boiling water when your Executive Group, in consultation with appropriate Advisory Group members, has already decided to do so and informed political leaders of this decision.
- Avoid overly downplaying the effect of cryptosporidiosis on people with healthy immune systems. While not life-threatening for the general public, cryptosporidiosis can still be a very unpleasant experience and your credibility could be hurt if you are seen as dismissing their concerns.
- For the media’s own use and/or for inclusion in their stories, provide the phone number for CDC’s Voice Information System (404-330-1242) and the Internet address for CDC’s cryptosporidiosis page (www.cdc.gov/ncidod/diseases/crypto/crypto.htm).

CHAPTER 2

Epidemiologic Surveillance



Chapter 2 - Epidemiologic Surveillance

Dennis D. Juranek, Centers for Disease Control and Prevention and
1994 participants in a CDC/EPA sponsored workshop "Prevention and Control of
Waterborne Cryptosporidiosis: an Emerging Health Threat"

(Reference: Juranek DD, Addiss DG, Bartlett ME, Arrowood MJ, Colley DG,
Kaplan JK, Perciasepe R, Elder JR, Regli SE, and Berger PS. Cryptosporidiosis and
public health: Workshop report. *Journal of the American Water Works Association*.
1995; 87:54-68.)

EPIDEMIOLOGIC SURVEILLANCE

Surveillance Systems

Local public health officials should consider developing one or more surveillance systems to establish baseline data on the occurrence of cryptosporidiosis among residents of their community and, where possible, obtain sufficient epidemiologic data to identify potential sources of infection. These baseline indices will be helpful in assessing whether oocysts that are found in drinking water are associated with any increases in the number of *Cryptosporidium* infections in the community. Such surveillance should be considered by all communities whose water utility provides service to 100,000 persons and whose water supply is derived from surface water. Communities with populations of 10,000-99,999 persons will not be required by the ICR to monitor their source water for *Cryptosporidium*. Small communities with unfiltered surface water or with water quality indices that suggest their filters are not adequately removing oocysts should also consider conducting surveillance for cryptosporidiosis.

No single surveillance strategy can be recommended or would be feasible for all locations; therefore, communities should select a method that meets local needs and is most compatible with existing disease surveillance systems or ongoing special studies. Neither increased incidence of diarrhea nor *Cryptosporidium* infection in a community establishes water as the cause of infection. Any increased occurrence of either diarrhea or laboratory-confirmed *Cryptosporidium* infection detected by surveillance requires further epidemiologic investigation to identify the source(s) of infection. The following six approaches to surveillance are presented hierarchically by increasing order of the perceived effort and cost.

Monitor sales of antidiarrheal medications.

Local pharmacies often have computerized data bases that contain the number of medications sold daily. The development of an information exchange between local pharmacists and state or local public health officials is a cost-effective and timely way to detect increases in diarrheal illness in some communities. In addition, these data bases can provide historical data that can serve as an indicator of baseline sales rates for antidiarrheal medication.

Surveillance should be considered by all communities whose water utility provides service to at least 100,000 persons, and whose water supply is derived from surface water.

Monitor logs maintained by Health Maintenance Organizations (HMOs) and hospitals for complaints of diarrheal illness.

HMOs and hospitals often have computerized systems for logging telephone calls regarding patient illnesses. Information entered promptly into a computerized data base can effectively monitor both complaints of diarrhea and severity of gastrointestinal disease in a community. These data are particularly useful if your local medical-care facility records zip code numbers for persons who are ill, because waterborne illness associated with inadequate water treatment affects persons residing throughout the water distribution area.

Monitor incidence of diarrhea in nursing homes.

During outbreak investigations, data from nursing homes have implicated drinking water as the source of community infection. Diarrheal illness rates in residents of nursing homes that use municipal drinking water can be compared with illness rates in residents of other nursing homes in the same community that use a different water source (e.g., well water). Because nursing staff usually record the frequency and characteristics of bowel movements for each resident, such data also can be used for other surveillance purposes. Substantial efforts by your local or state health department might be needed to review and extract the relevant data from patient records, which could differ in format by nursing home. If this measure is employed, health departments also should establish a baseline for the population comprising nursing home residents, which usually experiences more gastrointestinal problems than the general population.

Monitor laboratory data for *Cryptosporidium*.

Most laboratories do not look for *Cryptosporidium* in stool specimens submitted for routine parasitologic examination. To obtain this information, health-care providers usually must request specifically that stool specimens be examined for *Cryptosporidium*. Because health-care providers who treat patients who have AIDS are more likely to suspect cryptosporidiosis as a diagnosis in such patients who have diarrhea, they are more likely than other health-care providers to request specific testing for *Cryptosporidium*. Thus, current laboratory-based surveillance for cryptosporidiosis would more likely detect an increased number of *Cryptosporidium* infections in patients who have AIDS than in immunocompetent patients in the general population.

To determine more accurately the occurrence of *Cryptosporidium* infection in the general population, health-care providers should be aware of the public health importance of obtaining data on the occurrence of cryptosporidiosis. Further, they should be encouraged to submit stool specimens for *Cryptosporidium* testing in persons who have symptoms compatible with the disease. However, the cost of the additional laboratory testing for cryptosporidiosis in immunocompetent patients may present an obstacle, especially because specific therapy will not necessarily be implemented as a result of a confirmed diagnosis. Some HMOs and laboratories might be able to provide computerized reports of all *Cryptosporidium* diagnoses. You must also be aware that substantial delays can occur between the completion of the test and the entry of data into a computer.

Monitor tap water in selected cities.

Intensive surveillance in a sample of six to 10 cities known to have *Cryptosporidium* oocysts in their finished water can provide a method for assessing how often a temporally related increase in diarrheal illness or *Cryptosporidium* diagnosis occurs during the first week or first 2 weeks after oocysts are found in drinking water. Health departments and public officials in other cities can use information derived from analysis of the data generated at these sites as a basis for local decision making and for educating the public about the health risks associated with similar levels of oocyst contamination of their water supplies. Health officials in cities participating in this intensive surveillance would need to implement thorough surveillance techniques for recording diarrheal illness and laboratory-confirmed *Cryptosporidium* diagnoses, and they should monitor finished water for *Cryptosporidium* oocysts more frequently than required by the ICR. In addition to identifying small outbreaks, these studies could be used to compare the effectiveness of different surveillance methods (including those described previously) and to identify cases of cryptosporidiosis for possible inclusion in epidemiologic studies that could further define the risks for waterborne cryptosporidiosis.

Make immediate epidemiologic assistance available.

Rapid initiation of epidemiologic investigations might be necessary when disease surveillance or water quality data indicate that the public might be at increased risk for cryptosporidiosis. Although some states and cities could implement such investigations independently, many could not and would need technical and financial assistance. These investigations should emphasize a) assessment of the morbidity and mortality in various immunocompromised populations, b) appropriate and rapid environmental testing for *Cryptosporidium* oocysts, c) rapid identification and evaluation of potential sources of water contamination (e.g., sewage), and d) a thorough engineering assessment of the water utility's equipment and treatment processes.

CHAPTER 3

Clinical Laboratory Testing



Chapter 3 - Clinical Laboratory Testing

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CLINICAL LABORATORY TESTING

Laboratories can play a critical and preemptive role as a community’s first line of surveillance in detecting waterborne outbreaks when they are aware of increased numbers of stool specimens, and suspect or identify *Cryptosporidium* as the cause of illness. In addition, strong working relationships between clinical laboratories and state or local public health laboratories or agencies can facilitate a meaningful and rapid response related to potential outbreaks.

Clinical and public health laboratories potentially play a key role in adding to the limited knowledge of the endemicity and ultimately the natural history of *Cryptosporidium*. This chapter addresses the early detection of waterborne outbreaks of cryptosporidiosis and some strategies that could be used to a) determine endemic levels of *Cryptosporidium* infections unrelated to outbreaks, b) detect *Cryptosporidium* outbreaks by causes other than potable waterborne sources (e.g., food, surface or recreational waters, pets or farm animals, or sexual activity), or c) determine outbreak or endemic levels of other infectious diseases.

External Planning

Potential planning options are suggested below. These steps may or may not apply to all of the wide variety, size, type, and function of laboratories (e.g., state public health, local public health, reference, community hospital, and medical center clinical laboratories). However, each laboratory should determine its own appropriate public health response plan and coordinate it with other agencies *before a crisis*.

Laboratorians should educate those using their services as to what is and is not included in routine culture and fecal parasite examinations in their laboratory. Physicians may incorrectly assume certain enteric pathogens are routinely tested for.

External Planning Before A Waterborne Disease Outbreak

Know the name and phone numbers of appropriate officials to call if you suspect a community-wide situation might be developing.

For example

- a) your state or local public health agency or laboratory;
- b) state or local water utility or regulatory agency; and
- c) other local clinical microbiology laboratories.

Discuss and plan follow-up steps with appropriate agency(s) when test results suggest a potential outbreak.

Local public health agencies and/or water utilities with knowledge of at-risk water quality conditions should alert laboratories of the potential for waterborne pathogens in stool specimens.

Internal Planning

The goal of an internal planning process is to prevent a delay in the detection of an increase in the number of stool specimens, which can signal an outbreak. Internal planning allows prompt detection of a potential outbreak and implementation of community-wide prevention strategies.

The tasks of assessing increases of diarrheal stool specimens and added testing are not without additional costs. These recommendations should be considered in view of individual budgetary limitations; therefore several options are offered.

Clinical laboratories should have plans in place to alert either state or local public health agencies when increases in the number of diarrheal stool specimens (or all stool specimens when stool consistency is unknown) occur from outpatient, emergency room, or short-term inpatient populations.

Assessment of an Increase

Laboratories are encouraged to monitor the number of diarrheal stool specimens (or total stool specimens) submitted and to note any increases over their established baseline. If the number of specimens exceeds a predesignated threshold number, the laboratory should consider the possibility of an outbreak such as waterborne cryptosporidiosis. Other nonroutine causes of illness should be considered if other increases in laboratory specimens suggest it.

Suggestions for Assessments

Establish a baseline of the number of stool specimens submitted per day or week: for example, the daily or weekly average for the previous month or year, or a rolling 3-month weekly average, or the prior week's total. Compare the number of current cases with the chosen baseline threshold.

When possible, have your LIS activate a "flag" when baseline thresholds are exceeded.

If resources do not allow for routine quantitative monitoring: call your public health authority when a noticeable increase in stools with no apparent explanation occurs, especially diarrheal stools. Several such calls from laboratories could suggest a meaningful pattern.

If a laboratory is unable to test or confirm a positive *Cryptosporidium* finding, then that laboratory should have plans in place with another facility such as a state or local public health or reference laboratory to do such testing.

When a noticeable increase of enteric pathogen-negative diarrheal specimens occurs, your clinical microbiologists should suggest to physicians that testing for *Cryptosporidium* and other enteric pathogens may be appropriate.

Notify public health authorities when any increase in findings of *Cryptosporidium* or other enteric pathogens are confirmed, following the guidelines of your public health response plan (see Chapter 1).

Testing

Complete, accurate, and relevant laboratory testing depends on compliance with recommended guidelines. Specimen collection and transport protocol must be followed that includes placing appropriate information on test requisitions and specimen containers. In addition, communication between the laboratory and clinician should include specimen rejection criteria and test result limitations. Only when proper specimen submission is ensured can a thorough understanding and interpretation of the test result be guaranteed.

Collection Containers, Requisitions, and Report Formats

A description of the physical nature of a stool specimen (formed, soft, watery, and other factors such as blood or mucus) should be noted, especially for stool in collection vials (stored in transport media or with stool preservatives). Once the stool is mixed with the collection vial contents, the original consistency of the specimen cannot be determined. The laboratory request form or the specimen container must therefore be marked accordingly.

Laboratorians should educate those using their services as to what is and is not included in routine culture and fecal parasite examinations in their laboratory. Physicians may incorrectly assume certain enteric pathogens, such as *Cryptosporidium* or *Escherichia coli* 0157:H7, are routinely tested for in enteric examinations. Such organisms may be listed as separate requests on the form if they are not part of the routine workup.

Another way to clarify results for clinicians is to report which enteric pathogens were *not* detected rather than stating that *no* enteric pathogens were detected. For example:

- “No *Salmonella*, *Shigella*, or *Campylobacter* detected. Other pathogens require specific requests.”
- “No ova or parasites detected. Some parasites that occasionally cause diarrheal illness, such as *Cryptosporidium*, require a request for a specific test.”
- “To discuss further appropriate testing of this specimen, please consult ‘Laboratory/Microbiology Director.’”

Test Options

Before testing a stool specimen for the presence of *Cryptosporidium*, the proper collection and transport of stool samples in fixatives such as 5 to 10% buffered Formalin or Sodium Acetate-Formalin (SAF) are essential to obtain a reliable test result. Polyvinyl-Alcohol (PVA)-preserved specimens are not appropriate for the modified acid-fast staining procedure.

Several alternatives exist for examining stool specimens or their concentrates for *Cryptosporidium*. These options vary in their sensitivity, specificity, and cost. While an experienced microbiologist may be able to detect heavy concentrations of oocysts in a wet mount, generally additional testing will be needed to confirm the identification or detect low numbers of organisms. Additional tests may include a modified acid-fast or fluorescent antibody stain, or an Enzyme-Linked Immunosorbent Assay (ELISA) test. If testing for the presence of *Cryptosporidium* is not available, then contact a state or local public health laboratory for assistance.

Methods (See Tables)

Collection

- Follow collection recommendations and precautions on routine parasitologic examination of stools. For immunodiagnostic assay kits, follow manufacturer's instructions (refer to references on following pages).

Transport

- If immediate examination is not possible, use one of several preservatives such as 5 to 10% buffered Formalin, Merthiolate-Iodine-Formalin (MIF), or SAF.
- Refrigerate unpreserved specimens to delay deterioration. Do not freeze specimens.

Processing

- Unconcentrated, fresh specimens can be examined by wet mount preparations.
- Concentration by the Formalin ethyl acetate method is preferable. Optimal centrifugation time and speed, 10 minutes at 500 X, are critical for concentrating *Cryptosporidium* oocysts.
- PVA-preserved specimens are *not* acceptable for modified acid-fast staining for detection of *Cryptosporidium*.

Testing

- High concentrations of oocysts can be detected in *unconcentrated* wet mounts. However, direct wet mounts are insufficient for detecting oocysts in low concentrations; results should be confirmed by a modified acid-fast or antibody-specific test.
- The auramine-rhodamine nonspecific fluorescent stain can be used as a screening test but is usually not as sensitive as other methods. Results should be confirmed by a modified acid-fast or antibody-specific test.
- For modified acid-fast methods use any of several acceptable variations. (Note: Trichrome-stained smears are not recommended for detection of *Cryptosporidium*.)
- Commercial immunodiagnostic methods are available that vary in cost, sensitivity, and specificity (refer to tables).

Table A

Immunodiagnostic Assay Kits

Giardia Kits		Cryptosporidium Kits	
<p>ProSpec T <i>Giardia</i> EZ Microplate Assay (EIA)</p> <p>Alexon 1190 Borregas Avenue Sunnyvale, CA 94089-1302 (800) 366-0096</p>	<p>Color Vue (EIA)</p> <p>Seradyn P.O. Box 1210 Indianapolis, IN 46206 (800) 345-0915</p>	<p>ProSpecT Microtiter Assay (EIA)</p> <p>Alexon 1190 Borregas Avenue Sunnyvale, CA 94089-1302 (408) 747-7000</p>	<p>IDEIA</p> <p>Dako Corp. 6392 Via Real Carpinteria, CA 93013</p>
<p>Merifluor (DFA)</p> <p>Meridian Diagnostics, Inc. P.O. Box 44216 Cincinnati, OH 45244 (800) 543-1980 (Detects both <i>Giardia</i> and <i>Cryptosporidium</i>)</p>	<p>Giardia-CEL (DFA)</p> <p>TechLab Corporate Research Center 1861 Pratt Drive Blacksburg VA 24060 (540) 231-3943</p>	<p>ProSpec TR (EIA)</p> <p>Alexon 1190 Borregas Avenue Sunnyvale, CA 94089-1302 (408) 747-7000</p>	<p>Premier <i>Cryptosporidium</i> (EIA)</p> <p>Meridian Diagnostics, Inc. P.O. Box 44216 Cincinnati, OH 45244 (800) 543-1980</p>
<p>Premier <i>Giardia lamblia</i> (EIA)</p> <p>Meridian Diagnostics, Inc. P.O. Box 44216 Cincinnati, OH 45244 (800) 543-1980</p>		<p>Color Vue (EIA)</p> <p>Seradyn P.O. Box 1210 Indianapolis, IN 46206 (800) 345-0915</p>	<p>Crypto IF Kit</p> <p>TechLab Corporate Research Center 1861 Pratt Drive Blacksburg, VA 24060 (540) 231-3943</p>
		<p>Merifluor (DFA)</p> <p>Meridian Diagnostics, Inc P.O. Box 44216 Cincinnati, OH 45244 (800) 543-1980</p>	<p>Giardia/Crypto IF Kit</p> <p>TechLab Corporate Research Center 1861 Pratt Drive Blacksburg, VA 24060 (540) 231-3943</p>

Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service, the U.S. Department of Health and Human Services, the Centers for Disease Control and Prevention, or any of the member agencies of the Working Group on Waterborne Cryptosporidiosis.

Table B

**Advantages and Disadvantages
of EIA and FA Kits
Compared with Traditional Methods**

The following parameters need to be reviewed before selecting a test kit.

EIA Diagnostic Kits

Advantages	Disadvantages
Visual Interpretation. Easy to perform. Good screening technique. Easy to test large numbers of specimens. Can be automated. Increased sensitivity.	Not recommended as replacement for O & P examination. Dilution step may be required. Wash step is critical to avoid false positives. May be difficult to interpret visually. Higher cost.

FA Diagnostic Kits

Advantages	Disadvantages
Short examination time. Recommended stool concentration yields more accurate results. Some reagents detect <i>Giardia</i> cysts and <i>Cryptosporidium</i> oocysts at the same time. Can batch test. Fluorescence is bright; slides very easy to read under low magnification Can be read quickly.	Recommended concentration is time consuming. Requires fluorescence microscope. Higher cost.

Note:

- 1) Comments on the advantages and disadvantages for each test product are extracted from the literature.
- 2) The selection of a particular method is the responsibility of an individual laboratory. These selections are based on a number of factors, including cost, anticipated workload, ease of kit use, number of trained staff, single vs. batch testing, physician clients, patient base, size of laboratory, availability of equipment, compatibility of method with laboratory work flow, and training needs.
- 3) External controls in addition to kit controls offer an extra measure of quality control.
- 4) Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service, the U.S. Department of Health and Human Services, the Centers for Disease Control and Prevention, or any of the member agencies of the Working Group on Waterborne Cryptosporidiosis.

Table C

Traditional Assays for *Cryptosporidium*

Name	Specificity	Sensitivity	Advantages	Disadvantages
*Modified acid-fast stain.	Not specific for <i>Cryptosporidium</i> .	Not as sensitive as immunodiagnostic methods.	Inexpensive. Allows detection of other parasites such as <i>Isoospora</i> or <i>Cyclospora</i> that would be missed by specific immunodiagnostic kits.	May be less sensitive than some specific immunodiagnostic kits.
Auramine-rhodamine stain.	Not specific for <i>Cryptosporidium</i> .	Not as sensitive as immunodiagnostic methods.	Inexpensive. Rapid screening possible at lower power magnification.	May be less sensitive than some specific immunodiagnostic kits. Fluorescent microscope required. Should be confirmed by a more specific method such as EIA or IFA.
Observation of direct wet mount with or without iodine.	Not specific for <i>Cryptosporidium</i> .	Not as sensitive as immunodiagnostic methods.	Does not require concentration. Inexpensive. Can provide rapid detection of oocysts without concentration, especially in heavy infections or in early outbreak situations.	Should be confirmed by a modified acid-fast stain or more specific methods such as EIA or IFA. Concentration with Formalin ethyl acetate is recommended. Direct wet mount is not sufficient to detect oocysts in light infections usually seen in follow-up, test-of-cure, and examinations of stool from patients shedding oocysts.

* The modified acid-fast stain, as used for Nocardia, does not use acid alcohol but uses 1 to 3% sulfuric acid as the decolorizer.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service, the U.S. Department of Health and Human Services, the Centers for Disease Control and Prevention, or any of the member agencies of the Working Group on Waterborne Cryptosporidiosis.

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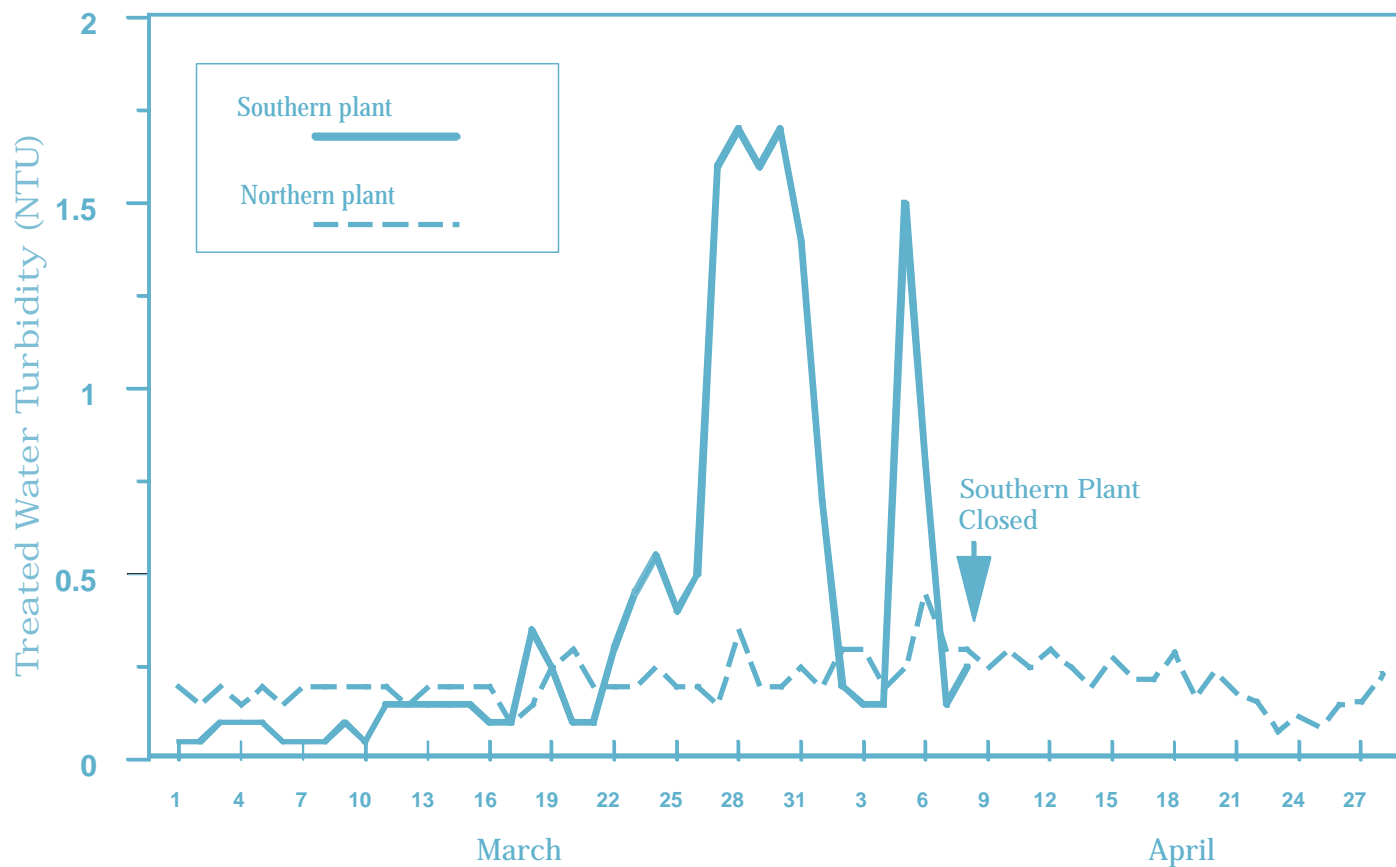
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CHAPTER 4

Evaluating Water Test Results



Chapter 4- Evaluating Water Test Results

Drinking Water Sources, Treatment, and Testing

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Chet Anderson, Metropolitan Water District of Southern California
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Environmental Sampling Methods

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Mark W. LeChevallier, American Water Works Service Co., Inc.
Joan Rose, University of South Florida
Stephen Schaub, U.S. Environmental Protection Agency
Ajaib Singh, City of Milwaukee Health Department
Mic Stewart, Metropolitan Water District of Southern California

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EVALUATING WATER TEST RESULTS

1. *Drinking Water Sources, Treatment, and Testing*

Drinking water is obtained from one of two types of sources:

Ground water, or water from underneath the surface of the earth, which is pumped up and out for use (e.g., well water) or flows naturally to the surface (e.g., spring water).

Surface water, or water from above ground sources, such as rivers, lakes and reservoirs.

Untreated surface water is more likely than ground water to contain *Cryptosporidium* and other pathogenic microorganisms because of the possibility of direct contamination with animal feces, treated and untreated human sewage, or fecal run-off from adjacent land after heavy rain or snow melt. Ground water is less likely to be contaminated with *Cryptosporidium* because water carrying this size pathogen must usually seep through layers of soil and sand which in essence “filters” out the organism before the water reaches the well. The few ground water-associated outbreaks of cryptosporidiosis that have occurred have been attributed to wells that were either poorly located, constructed, or damaged. An example of a poorly located well is one that may be contaminated by a nearby sewage or septic system. A poorly constructed well or a well with ruptured casings or pipes may also become contaminated.

Water Treatment

Chemical Disinfection

Chemical disinfection is the most common way to make water safe to consume. Chemical disinfection kills many of the harmful microorganisms that might be in raw, or untreated, water. Chlorine is the disinfectant most commonly used by water utilities to treat drinking water; other disinfectants used include chloramine, chlorine dioxide, and ozone. Unfortunately, chlorine-based formulations commonly used by the water treatment industry are not effective against *Cryptosporidium*. Additional research is needed to determine the optimal dose of ozone and resolve other technical and practical issues that may limit its routine use.

Filtration

The conventional filtration process used by most surface water treatment plants usually includes several steps: coagulation-flocculation, sedimentation, and filtration. During the first step in the process, a chemical (coagulant) is added to the water that causes small suspended particles to stick together (flocculation) to form larger particles that either settle to the bottom (sedimentation) or are more easily removed by a water treatment filter that principally relies on fine sand. The coagulation-flocculation step is critical for successful removal of chlorine-resistant protozoa (1-20 microns in size) which could easily slip through the 50-70 micron spaces between grains of sand in a water treatment filter. Poor mixing of coagulants with water and failing to add the appropriate amounts of coagulants are common causes for inadequate filtration. Because the dose of coagulant needed may frequently vary with changes in raw water pH, temperature, or turbidity, successful filtration relies strongly on the training and experience of the filter operator.

Conventional water filtration should trap nearly all protozoan parasites, including *Giardia* and *Cryptosporidium*, if the water is properly processed with adequate equipment and optimal procedures (coagulation-flocculation) are conducted by well-trained operators. However, a small number of *Cryptosporidium* oocysts may occasionally get through the treatment process to the finished drinking water. The health risk associated with drinking filtered or unfiltered water containing *small numbers* of *Cryptosporidium* oocysts is unknown. Oocysts found in drinking water may not be infectious if they are dead, damaged by the treatment process, or of a species of *Cryptosporidium* not infectious to humans. Large numbers of oocysts, or high turbidity or "cloudiness," in finished water indicates inadequate filtration, filter failure, or a filter malfunction that may lead to an outbreak.

Drinking Water Testing

Coliform Bacteria Tests

Coliform bacteria are common in the environment and are generally not harmful. The presence of these bacteria in drinking water, however, generally is the result of a problem with water treatment or distribution pipes, and indicates that the water may be contaminated with organisms that can cause disease. A total coliform test measures the presence or number of living aerobic coliform bacteria in a water sample.

If the total coliform test on a sample of drinking water is positive (1 or more coliforms per 100 ml of water), either a fecal coliform test or an *Escherichia coli* test must be performed to determine if any coliform bacteria found are of fecal origin. Water utilities usually collect additional water samples for this purpose within 24 hours of notification of a positive total coliform test. If a fecal coliform or *E. coli* test is positive, this is a strong indication that the water in question may be contaminated with fecal material. The *E. coli* test is more specific for bacteria of fecal origin than the fecal coliform test. A positive fecal coliform test is possible without recent fecal contamination. When tests for fecal bacteria are positive, follow-up investigations of the water treatment plant and water distribution system are usually initiated and issuance of a boil water advisory may be considered.

Turbidity Tests

Turbidity tests measure the level of suspended particles or "cloudiness" in water. Turbidity is measured in nephelometric turbidity units, or NTUs. High turbidity in finished water can be an indicator of possible water contamination, inadequate filtration, or other water system problems. A single spike exceeding 5 NTUs violates current EPA standards for drinking water. Ninety-five percent of all monthly post-filtration readings must be less than or equal to 0.5 NTUs to meet EPA standards for the most commonly used type of water filter. Recent research, however, indicates that *Cryptosporidium* is most reliably removed when water turbidity is consistently maintained at 0.1 NTU or lower. The American Water Works Association encourages its membership to strive for the 0.1 NTU goal to reduce the risk of waterborne cryptosporidiosis.

Environmental Sampling Methods

Environmental sampling methods for detecting and quantifying *Cryptosporidium* oocysts were adapted from those for *Giardia* cysts. The methods were originally developed to assist in the investigation of suspected waterborne outbreaks. They were subsequently applied to studies seeking to determine the occurrence and distribution of protozoa in water and to assess drinking water treatment effectiveness. Since *Giardia* and *Cryptosporidium* do not reproduce outside the host, the number of organisms per unit volume of water decreases with distance from the point of contamination. Methods for detecting *Cryptosporidium* in environmental water samples usually involve a procedure for concentrating the organisms from large-volume water samples. These methods are designed for detecting *Giardia* cysts as well. Sample volumes generally recommended are 100 liters for source water and 1000 liters or more for finished water.

The usual procedure for collecting oocysts from a sample of water is filtration through nominal 1 micron porosity yarn-wound polypropylene filter cartridges. These are widely used because they are effective with high or low turbidity waters containing a variety of suspended material, and they are relatively inexpensive. Other types of filter cartridges used for concentrating cysts and oocysts are fiberglass-resin cartridge tubes and membrane filters.

Next, filters are eluted in a laboratory with detergent solutions and the recovered particulates are concentrated by centrifugation. Water samples may contain a variety of viable and nonviable organisms, as well as inorganic materials. Detection methods therefore include a purification step to separate the target *Giardia* cysts and *Cryptosporidium* oocysts from the rest of the particulates. This has usually been accomplished by flotation on density gradients consisting of sucrose, Percoll (an organically coated colloidal silica compound), Percoll-sucrose mixtures, or various salt solutions.

The method most widely used in the United States for examining purified material for protozoa is an antibody-based immunofluorescence assay. After staining the purified material with fluorescence antibody reagents, the sample is examined by microscope with an ultraviolet light source. Tentative identification of oocysts is based on the fluorescence reaction, size, and shape of any oocyst-like object. Positive identification requires observing one or more sporozoites within the oocysts by visible light microscopy (phase-contrast or differential interference microscopy).

Antibody-based microscopic methods have several limitations, including the lack of information on the infectivity or viability of cysts or oocysts; the lack of indication of the host species of origin of the organisms; the chance of false identification of algal or other protozoal species as *Cryptosporidium* or *Giardia*; poor recovery efficiency; poor precision; the time-consuming nature of the process; and the need for an experienced and skilled microscopist.

These limitations notwithstanding, existing methods have been useful in outbreak investigations, in identifying possible sources of contamination and in controlled experiments for determining the effectiveness of different treatment processes in removing protozoa. The Milwaukee cryptosporidiosis outbreak in 1993, together with EPA regulatory activities, have stimulated interest and research on better and more cost-effective methods.

Almost all of the following methods address *Giardia* as well as *Cryptosporidium*. Complete methods, assays, and processing techniques, and viability determinations are presented in the following series of tables. Table A summarizes methods characteristics. Since most of the methods use assays that are antibody-based, relevant information on available antibodies is presented in Table B.

More detailed information may be found in: Jakubowski W, Boutros S, Faber W, Fayer R, Ghiorse W, LeChevallier M, Rose J, Schaub S, Singh A, Stewart M. Environmental Methods for *Cryptosporidium*. *Journal of the American Water Works Association*. 1996. 88:107-121.

Table A

Environmental Methods for Cryptosporidium Detection

Complete Methods	Sample Collection/Processing	Assay Type	Target	Viability (Y/N)	Species ID (Y/N)	Status ^a
Immunofluorescence Assay-Cartridge American Society for Testing and Materials/ Information Collection Rule ^b	yarn-wound filter/ centrifugation; flotation	microscopic; antibody-based	oocyst	N	N	I
IFA-Membrane ^c	membrane filter/squeegee or acetone; flotation	microscopic; antibody-based	oocyst	N	N	I
Flow Cytometry ^c	filter or grab/CaCO ₃ ppt; centrifugation; cell sorting	microscopic; antibody-based	oocyst	N	N	1/2B
Electrorotation Assay ^c	foam filter/immunomagnetic separation	microscopic; electric field; antibody-based	oocyst	?	N	2C
Assays						
Fluorescence In Situ Hybridization/ Confocal Laser Scanning Microscopy		microscopic; oligo- nucleotide probes; fluorochromes	oocyst/sporozoite	?	Y	2A
UV-Vis		spectrophotometer	oocyst	?	Y	2A
Enzyme Linked Immunosorbent Assay		plate reader; antibody-based	antigens	N	N	?
Culture		tissue culture cells; various assays	infective sporozoites	Y	?	2A
Polymerase Chain Reaction		gel analysis	DNA/RNA	?	Y	2B
Processing Method						
Immunomagnetic Separation			oocyst			2B

^a Status: 1 = In Use 2 = Developmental (stage designation is arbitrary) A = early stage B = mid stage C = late stage

^b 100 L or > Sample volume ^c 20 L Sample volume

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Antibody Products for Detecting *Cryptosporidium*

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
Products Used Primarily for Environmental Samples					
Anti-Cryptosporidium Antibody Biovir Laboratories, Inc. 685 Stone Road Benicia, CA 94510 Phone: (800) 442-7342	<ul style="list-style-type: none"> • Direct IFA Monoclonal, mouse IgM • Conjugate: FITC, others on request. • Counterstain: none 	Environmental samples	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (+) <i>C. serpentis</i> (NT)</p>	Not known	None
Hydrofluor Combo EnSys, Inc. ^a P.O. Box 14063 Research Triangle Park, NC 27709 Phone: (919) 941-5509	<ul style="list-style-type: none"> • Indirect IFA Kit • Primary: Monoclonal, mouse IgM • Secondary: Goat anti-mouse IgM (with BSA) • Conjugate: FITC • Counterstain: none 	Environmental samples	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (+) <i>C. muris</i> (+) <i>C. meleagridis</i> (+) <i>C. baileyi</i> (-) <i>C. serpentis</i> (+) <i>C. sp. (lizard)</i> (+) <i>C. sp. (turtle)</i> (+)</p>	<p>Protozoa: <i>Entamoeba coli</i>, <i>E. histolytica</i>, <i>E. hartmanni</i>, <i>Endolimax nana</i>, <i>Iodamoeba buetschlii</i>, <i>Giardia lamblia</i>, <i>Chilomastix mesnili</i>, <i>Dientamoeba fragilis</i>, <i>Trichomonas hominis</i>, <i>Balantidium coli</i>, <i>Blastocystis hominis</i>, <i>Isospora belli</i>.</p> <p>Helminth eggs and larvae: <i>Ascaris lumbricoideis</i>, <i>Trichuris trichiura</i>, Hookworm, <i>Strongyloides stercoralis</i>, <i>Taenia</i> sp., <i>Hymenolepis nana</i>, <i>Hymenolepis diminuta</i>, <i>Diphyllobothrium latum</i>, <i>Clonorchis sinensis</i>, <i>Paragonimus westermani</i>, <i>Fasciola Fasciolopsis</i>, <i>Schistosoma mansoni</i>.</p> <p>Bacteria: <i>Shigella flexneri</i>, <i>Salmonella</i> Groups B and D, <i>Campylobacter jejuni</i>, <i>Mycobacterium avium</i>, <i>M. intracellulare</i>.</p> <p>Yeast and yeast-like fungi: <i>Candida albicans</i>, <i>C. guilliermondii</i>, <i>C. tropicalis</i>, <i>C. krusei</i>, <i>C. pseudotropicalis</i>, <i>C. parapsilosis</i>, <i>C. (Torulopsis) glabrata</i>, <i>Cryptococcus neoformans</i>, <i>C. laurentii</i>, <i>Saccharomyces cerevisiae</i>, <i>Geotrichum</i> sp., <i>Trichosporon cutaneum</i>, <i>Rhodotomula rubra</i></p>	2, 4, 7, 8, 10, 11

^a Manufactured by Meridian Diagnostics, Inc., P.O. Box 44216, 3471 River Hills Dr., Cincinnati, OH, 45244 Phone: (800) 543-1980. Positive reactions that may be lessened by using goat serum as a blocking agent have been reported for this antibody when used with some algae (see reference 10). Anecdotal reports exist of positive reactions of this antibody with unidentified yeasts.

Note: This information was current as of January, 1996. Testing for antibody reactivity is not uniform, nor are standard protocols available for testing the reactivity of oocysts with antibodies. Consequently, procedures used in the references for determining reactivity vary among laboratories. Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service, the U.S. Department of Health and Human Services, the Centers for Disease Control and Prevention, or any of the member agencies of the Working Group on Waterborne Cryptosporidiosis.

Table B (Continued)

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
Detect IF <i>Cryptosporidium</i> ^b Shield Diagnostics, Ltd. The Technology Park Dundee DD1 1 SW Scotland, Great Britain Phone: 44-1382-422000	<ul style="list-style-type: none"> • Direct IFA • Monoclonal, mouse IgM • Conjugate: FITC • Counterstain: Evans blue 	<ul style="list-style-type: none"> • Environmental samples, feces. • May be used for clinical diagnosis. • U.S. availability for research only. 	<ul style="list-style-type: none"> <i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+) <i>C. meleagridis</i> (+) <i>C. baileyi</i> (+) <i>C. serpentis</i> (+) 	<i>Eimeria tenella</i> <i>Toxoplasma gondii</i>	9
Cryptocel-Cel IF Test Tech Lab ^c 1861 Pratt Drive Blacksburg, VA 24060 Phone: (540) 231-3943 Fax: (540) 231-3942	<ul style="list-style-type: none"> • Direct IFA Kit • Monoclonal, mouse IgM • Conjugate: FITC • Counterstain: With or without Evans blue 	<ul style="list-style-type: none"> • Research and environmental use only. • Acetone fixed fecal smears air-dried from 10% Formalin fixed stools or water 	<ul style="list-style-type: none"> <i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (+) <i>C. serpentis</i> (NT) 	<i>Blastocystis hominis</i> , <i>Entamoeba hartmanni</i> , <i>E. histolytica</i> , <i>Endolimax nana</i> , <i>Giardia intestinalis</i> , <i>Srongyloides stercoralis</i> , <i>Trichuris trichiura</i> , <i>Escherichia coli</i> , <i>Candida</i> sp., <i>Streptococcus faecalis</i>	
Crypt-A-Glo, Aqua Glo, Multi Glo Waterborne, Inc. 6047 Hurst Street New Orleans, LA 70118-6129 Phone/Fax: (504) 895-3338	<ul style="list-style-type: none"> • Monoclonal, mouse IgM, clone 2-C9 available as direct or indirect IFA. • Eleven products for water testing available. • Conjugate: FITC, Texas red, Biotin, phycoerythrin, or combinations, or not conjugated. • Counterstain: none 	Water testing	<ul style="list-style-type: none"> <i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+ weaker) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (+ weaker) <i>C. serpentis</i> (NT) 	<i>Giardia lamblia</i> <i>Giardia muris</i> <i>Giardia microti</i> <i>Entamoeba histolytica</i> <i>Entamoeba coli</i> <i>Blastocystis hominis</i> <i>Septata intestinalis</i> (Helminths, bacteria, yeasts, algae: none specifically tested but no reported reactions.)	None

^b This antibody was formerly produced and distributed by Northumbria, Northumberland, UK.
^c Manufactured by Cellabs Party Ltd., Unit 7-27 Dale Street, PO Box 421, Brookvale, NSW 2100 Australia, Phone: 02-905-133, FAX: 02-905-6426

Table B (Continued)

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
Products Used Primarily for Clinical Samples					
Clone BEL 0126 BioGenesis ^d 104 Little Mill Road Sandown, NH 03873 Phone: (603) 887-4600 Fax: (603) 887-4800	<ul style="list-style-type: none"> • Monoclonal, mouse IgG, 3-kappa • Titer: IF>1/100 ELISA>1/2000 • Recognizes specific membrane antigen, protein A purified, in PBS without preservatives. 	<ul style="list-style-type: none"> • Human and bovine feces by IF or ELISA. • For in vitro research and manufacturing use only. 	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	Not known	6
Clone 2G1 BioGenesis (as preceding)	<ul style="list-style-type: none"> • Monoclonal, mouse IgM, Ig fraction by selective precipitation, in PBS pH 7.2 without preservatives. • Titer: To be established in end user assay system. • Recognizes unknown antigen present on 17/27 human fecal oocyst preparations tested. • Used in combination with Clone 3E8 recognizes 27/27 preparations tested. 	<ul style="list-style-type: none"> • Human and bovine feces. • Smears air dried and fixed in 3% methanol. • For in vitro research and manufacturing use only. 	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	Not known	None

^d Manufactured by BioGenesis, Ltd., New Fields, Sainsford Road, Poole, England BH17 0N, Phone: (0202) 660006, FAX: (0202) 660020

Table B (Continued)

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
<p>Clone 3E8 BioGenesis (as preceding)</p>	<ul style="list-style-type: none"> • Monoclonal, mouse IgM (see Clone 2G1), recognizes unknown antigen present on 23/27 human fecal oocyst preparations tested. • In combination with Clone 2G1 or Clone 4H5, recognizes 27/27 preparations tested. 	<p>Human and bovine feces. For in vitro research and manufacturing use only.</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	<p>Not known</p>	<p>None</p>
<p>Clone 4H5 BioGenesis (as preceding)</p>	<ul style="list-style-type: none"> • Monoclonal, mouse IgA (see Clone 2G1), recognizes unknown antigen present on 16/27 human fecal oocyst preparations tested. • In combination with Clone 3E8 recognizes 27/27 preparations tested. 	<p>Human and bovine feces. For in vitro research and manufacturing use only.</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	<p>Not known</p>	<p>None</p>

Table B (Continued)

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
<p>Anti-Cryptosporidium Antibody Chemicon 28835 Single Oak Drive Tennecula, CA 92590 Phone: (800) 437-7500 Fax: (909) 676-9209</p>	<ul style="list-style-type: none"> • Monoclonal, mouse IgM, ascites fluid, not conjugated. • Recognizes 40 Kda antigen on <i>C. parvum</i> oocyst and binds to exterior. • Does not bind to sporozoites. 	<p>Not for use as a diagnostic. For research use only. ELISA, IF, and Western blotting.</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	<p><i>Eimeria auburnensis</i>, <i>E. bovis</i>, <i>E. ellipsoidalis</i>, <i>E. zuernii</i></p>	<p>1</p>
<p>Merifluor Cryptosporidium/Giardia Meridian Diagnostics, Inc. P.O. Box 44216 3471 River Hills Drive Cincinnati, OH 45244 Phone: (800) 543-1980</p>	<ul style="list-style-type: none"> • Monoclonal, mouse IgG. • Direct IFA kit. • Conjugate: FITC • Counterstain: Eriochrome black 	<p>Clinical fecal specimens, unfixed or fixed in 10% Formalin or PVA.</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (+) <i>C. muris</i> (+) <i>C. meleagridis</i> (+) <i>C. baileyi</i> (-) <i>C. serpentis</i> (+) <i>C. sp. (lizard)</i> (+) <i>C. sp. (turtle)</i> (+)</p>	<p>Same as Hydrofluor Combo, preceding</p>	<p>2, 5, 7, 11, 12, 15</p>

Table B (Continued)

Product Name, Distributor	Product Description	Manufacturer's Designated Use	Species of <i>Cryptosporidium</i> Detected (+/-) NT= not tested	Genera & Species Showing No Cross Reactivity	Bibliographic Reference
<p>Hyperimmune Anti-<i>Cryptosporidium</i> Bovine Colostrum NIH AIDS Research & Reference Reagent Program^e Ogden Bioservices Corp. 685 Lofstrand Lane Rockville, MD 20850 Phone: 301-340-0245 FAX: 301-340-9245 email: obcaids@lx.netcom.com</p>	<ul style="list-style-type: none"> • Polyclonal, bovine hyperimmune colostrum • Irradiated, high titer, from last milking of a 2-day period 	<p>For researchers registered with the program, this reagent is provided as a government service free of charge.</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	<p>Not known</p>	<p>3, 14</p>
<p>Anti-<i>Cryptosporidium</i> Antibody VMRD Inc. PO Box 502 NW 115 State Street Pullman, WA 99163 Phone: 800-222-8673 FAX: 509-332-5356</p>	<ul style="list-style-type: none"> • Monoclonal, mouse IgM • Conjugate: FITC or not conjugated 	<p>Not specified</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (NT) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (NT) <i>C. serpentis</i> (NT)</p>	<p><i>Eimeria auburnensis</i>, <i>E. bovis</i>, <i>E. ellipsoidalis</i>, <i>E. zuernii</i></p>	<p>1</p>
<p>Crypt-A-Glo Waterborne, Inc. (as preceding)</p>	<ul style="list-style-type: none"> • Same as above, but direct. • Conjugate: FITC • Counterstain: None 	<p>Clinical diagnosis of oocysts in stools</p>	<p><i>C. parvum</i> (+) <i>C. wrairi</i> (NT) <i>C. muris</i> (+ weaker) <i>C. meleagridis</i> (NT) <i>C. baileyi</i> (+ weaker) <i>C. serpentis</i> (NT)</p>	<p><i>Giardia lamblia</i> <i>Giardia muris</i> <i>Giardia microti</i> <i>Entamoeba histolytica</i> <i>Entamoeba coli</i> <i>Blastocystis hominis</i> <i>Septata intestinalis</i> (Helminths, bacteria, yeasts, algae: none specifically tested but no reported reactions.)</p>	<p>None</p>

^e Provided by Dr. Beth L.P. Ungar

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II. Issuing and Rescinding a Boil Water Advisory

Introduction

Issuing a boil water advisory (BWA) for the protection of public health from waterborne pathogens has serious implications for a community and must be done only after careful consideration.

Decisions must frequently be made within relatively short periods of time and with either incomplete or inconclusive information. Therefore, as stated in Chapter 1, the most effective way for a community to make decisions is to establish a local task force well in advance of any potential crisis to discuss issues that are critical to BWA decision making. The task force should consist of representatives from public health and regulatory agencies and the water utility.

The task force has two principal goals: to bring together these representatives to establish local water quality standards, and to establish a review process to be activated when a question about the safety of local drinking water arises. Issues for discussion might include the legal authority for issuance of a BWA, identification of regulatory concerns, critical water processing guidelines, source water factors (ground or surface), and public health implications. By discussing these issues well in advance, the task force can prepare itself to make sound professional judgements in the most informed and expeditious manner.

Boil Water Advisory Guidelines

The following guidelines are divided into three components:

- 1.) Factors that trigger a meeting of the task force to review data relevant to a BWA;
- 2.) Factors to be considered in issuing a BWA;
- 3.) Factors to be considered in rescinding a BWA.

Although the working group that developed this document and most water industry professionals encourage water utilities that filter water to maintain a finished water turbidity level of 0.1 NTU, these guidelines do not set specific turbidity levels, pathogen concentrations, or particle counts that would trigger the issuance of a BWA because of the following current limitations:

- The health risk associated with the consumption of drinking water contaminated with small numbers of *Cryptosporidium* oocysts is unknown.
- For *Cryptosporidium* and other emerging pathogens, the analytical methods for detection in water samples are developmental and may lack the sensitivity and specificity that would permit basing decisions about issuing BWAs on test results alone. Negative results, using currently available tests, do not necessarily indicate the absence of organisms, but only that none were detected in the sample analyzed. Positive results do not necessarily provide an accurate assessment of the number of organisms present nor of their infectivity or viability. Hence, a numerical standard for the number of organisms that should be of concern has not been developed.
- Some measurements, such as turbidity levels or particle counts are site-specific.
- The complex interplay of factors to be considered in making BWA decisions makes it difficult to set criteria on a national level that would be appropriate to all communities.

Factors That Trigger a Meeting of the Boil Water Advisory Task Force

- Evidence of disease in a community in which drinking water is suspected as the source of infection.
- Failure or significant interruption in key water treatment process(es) (e.g., increases in turbidity levels, increased particle counts, mechanical or equipment failure, persistent monitoring deficiencies).
- Positive test results for pathogens (e.g., *Cryptosporidium*, *Giardia*, *Shigella*) in water.
- An acute violation of the total coliform rule (TCR) or a violation of the surface water treatment rule (SWTR) turbidity standard.
- A persistent nonacute violation of the TCR.
- Any event (e.g., water main break, cross connection) that compromises the distribution system, coupled with an indication of a health hazard.
- A natural disaster that may adversely affect water quality (e.g., flood, hurricane, earthquake).

Issuing a Boil Water Advisory: Factors to Consider

Source water quality

- **Vulnerability of the source water to contamination.** The following may contaminate source water: recreational use, sewage or sanitary discharges, or livestock operations in the watershed area. Other site-specific factors, circumstances, and criteria should also be considered.
- **Previous monitoring results for pathogens.** Data from past monitoring or studies may be helpful in interpreting current test results.
- **Major changes to source water quality.** Source water quality can be altered by sewage or manure spills, destratification of a reservoir, recent heavy or persistent rainfall, floods, wind, water temperature changes, droughts, chemical changes, or related circumstances. These events may increase the risk of pathogen occurrence and concentration, or decrease the ability of the plant to treat the water effectively.

Treatment effectiveness

- **Plant optimization for pathogen removal.** A treatment plant should have a plan for treatment improvement such as that offered by EPA, water utilities, and states under the Partnership for Safe Water program. Evaluation of plant performance by a third party may also be beneficial.
- **Treatment failure or interruption.** Failure or interruption of key treatment processes can occur even if a system is optimal. Maintenance of all levels of a multiple barrier system (i.e., coagulation, flocculation, sedimentation, filtration, disinfection, or other individual water treatment processes) is critical to the effective removal of pathogens.
- **Finished water quality.** Finished water quality measurements that should be reviewed include turbidity levels, particle counts, disinfection (dosage, residual, and contact time), and the presence of pathogens or indicators at the treatment plant or in the distribution system. National water quality standards may not be adequate to prevent transmission of waterborne *Cryptosporidium*. Site-specific standards may need to be more stringent than current EPA regulations.

When evaluating positive test results for pathogens, consider:

- The experience of the laboratory with environmental samples.
- The appropriateness of sample collection and test methods for water.

- The inherent limitations in the test methods. For *Cryptosporidium*, negative results do not necessarily indicate the absence of organisms and positive results do not necessarily provide an accurate assessment of the number of organisms present, nor of their infectivity or viability.
- The time between collection of the sample and the availability of results. For example, a BWA may not necessarily be advisable if a positive test result was associated with a sample that was collected a month ago vs. a few days ago.

Distribution System Integrity

An assessment of the distribution system includes evaluating any disruption to the system such as:

- low pressure or main breaks
- cross connections
- recent construction that might interrupt pipe flow
- stagnant water
- disinfectant residual
- an inadequate flushing program
- age and condition of the system.

This information may be contained in recent sanitary surveys.

Epidemiologic evidence

Epidemiologic evidence that associates gastrointestinal illness with drinking water in any segment of the population should also be taken into account. Epidemiologic data suggesting waterborne disease should be acted upon even if disease-confirming water quality data are not readily available.

Rescinding a Boil Water Advisory: Factors to Consider

Source water quality

Source water quality indicators have returned to acceptable levels.

Treatment effectiveness

Treatment deficiency has been corrected.

Finished water quality

Finished water quality indicators have returned to acceptable levels and are within regulatory limits. Successive pathogen monitoring shows acceptable results. Sufficient finished water displacement has occurred in the distribution system to eliminate water that was or might have been contaminated. *If the BWA was issued because a pathogen was detected and that pathogen is no longer being detected, then the inadequacies of the pathogen detection methods must be considered before rescinding a BWA.*

Epidemiologic evidence

Epidemiologic evidence may be valuable. However, epidemiologic data is often not readily available for BWA decision-making.

Additional resources for this decision making are available. Local health and drinking water officials are encouraged to seek advice from their state epidemiologist (see Appendix, Figure F), and their state agency responsible for implementation of the Safe Drinking Water Act. On the federal level, 24-hour assistance is available through the EPA Environmental Response Team at (908) 321-6660 and CDC at (770) 488-7760 (during business hours) and (404) 639-2888 (nights, weekends and holidays).

Concerns anew

over 1

Feds announce
for deadly pa

New concerns about a p
and waterborne parasite
outbreak in Georgia
have emerged from an All
the federal government T
The National Association
of Public Health Officials
and CDC (NAPHA) said
ending Atlanta, are taking
to prevent the parasite
outbreak in drinking water
drinking residents.
The U.S. Environmental
Protection Agency
E. Coli

Drinking

one with weakened immu
burial. Fox publishes

CHAPTER 5

Outbreak Management

Parasite cause of illness at water park, county says

Franklin County officials are
reporting that some visitors
to the water park, the parasite
killed 100 and another 200
were hospitalized. The
county says the outbreak
began in March.

Bad taste on tap near plant

If you live near the Howard Avenue
water purification plant,
there's a good chance you came down with the stomach ailment
that afflicted thousands of Milwaukee-area residents.
And many of those residents said Friday that their tap water
had an unusual smell or taste the past few weeks.
Sandra Laib, of 515 W. Warrington Ave., said she noticed a
sudden change in the water about two weeks ago.
"It was smelly," he said. "I couldn't figure it out. I asked
my wife what was going on with the tap
water. She said it
didn't taste
right."

State, CDC probing outbreak source sought for illness-causing parasite

About half the cases involved
Wisconsin residents.
Health inspectors, however, have
not found a common source of
transmission.
It can be fatal to the very old and
very young, as well as those with
immune systems weakened from
cancer treatments, chemotherapy
and AIDS or HIV, the virus that
causes AIDS.
State Epidemiologist Dr. Alton
DeMara said yesterday investigation
has not determined the likely
source of the outbreak, or how
the illness is spread.
"I don't know," he said. "I don't
know how the parasite got here."
The CDC is also probing the
outbreak. "We're looking for
anyone who might have been
in contact with someone who
had the illness," he said.

THE WATERWORKS FLU

A tiny parasite gets the
blame for making
thousands of
Milwaukeeans miserable

Over the past few weeks, thousands of
Milwaukeeans have been
suffering from a mysterious
illness. The illness is
caused by a tiny parasite
that is found in water.
The illness is called
"the waterworks flu."
The illness is caused
by a tiny parasite that
is found in water.
The illness is called
"the waterworks flu."
The illness is caused
by a tiny parasite that
is found in water.

'Boy, is that water raunchy'

While the reports try to pinpoint the
source, the city's residents are saying
that they can't drink the water from
the Howard Avenue plant.
The city's residents are saying
that they can't drink the water from
the Howard Avenue plant.
The city's residents are saying
that they can't drink the water from
the Howard Avenue plant.



Neighbors of Howard Avenue plant complain of bad water

The city's residents are saying
that they can't drink the water from
the Howard Avenue plant.
The city's residents are saying
that they can't drink the water from
the Howard Avenue plant.

Flu-like illness detected in area

Health officials in the area
have reported a flu-like
illness. The illness is
caused by a tiny parasite
that is found in water.
The illness is called
"the waterworks flu."
The illness is caused
by a tiny parasite that
is found in water.

Parasite is detected in city water supply

Health officials in the area
have reported a flu-like
illness. The illness is
caused by a tiny parasite
that is found in water.
The illness is called
"the waterworks flu."
The illness is caused
by a tiny parasite that
is found in water.

DON'T DRINK the WATER

Tap water trouble for immune-deficient per

Health officials in the area
have reported a flu-like
illness. The illness is
caused by a tiny parasite
that is found in water.
The illness is called
"the waterworks flu."
The illness is caused
by a tiny parasite that
is found in water.

Chapter 5- Outbreak Management

Outbreak Assessment:

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Deborah A. Levy, Centers for Disease Control and Prevention

Anne C. Moore, Centers for Disease Control and Prevention

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News Release Information

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Thomas Navin, Centers for Disease Control and Prevention

Protocols for Special Audiences and Contingencies

City of Milwaukee Health Department

OUTBREAK MANAGEMENT

1. Epidemiology (checklist for investigating a possible outbreak)

1. Is an outbreak of cryptosporidiosis occurring?

An outbreak can generally be defined as a sudden increase in the incidence of disease in a defined area over a specific period of time. However, even if the number of reported cases of cryptosporidiosis exceeds the expected number, this excess may not necessarily indicate an outbreak. Reporting may increase because of changes in the local reporting procedures, changes in the case definition, increased interest because of local or national awareness, improvements in diagnostic procedures, or changes in laboratory standards or personnel. Similarly, a new physician or infection control nurse seeing referred cases may more consistently report them, when in fact there has been no change in the prevalence of disease.

A general increase in the rate of diarrheal illness in a community does not necessarily mean that a single type of organism or mode of transmission is the cause. One quick way to determine if a specific organism is the predominant cause of diarrhea is to collect stool samples from 10-20 ill people and a similar number from controls (people without diarrhea) and have them tested for a variety of organisms (bacteria, viruses, parasites) by a reliable laboratory. If one organism is commonly found in the stool of ill persons and rarely found in stools from controls, it is likely that this organism is the cause of the outbreak. The finding of two or more different organisms could indicate a) sporadic cases of different diseases are occurring in the same area at the same time; b) multiple outbreaks with different modes of transmission are occurring; or c) a single outbreak is occurring in which multiple organisms are being transmitted in the same way, e.g., sewage-contaminated water may transmit a number of pathogens simultaneously.

An approach for rapidly determining if there is an increase in cases of cryptosporidiosis or diarrhea is outlined below:

- Review data available from ongoing surveillance systems for diarrheal illness or cryptosporidiosis. (See Chapter 2 for information on conducting surveillance)
- Set up a system for recording basic information about people who call the health department or water utility to report laboratory-confirmed infection and clinical illness consistent with cryptosporidiosis. Use a standardized questionnaire or data collection form such as the ones in Figures D and E in the appendix to capture comparable information from all callers. Information collected should include the name and phone number of persons reporting illness, demographic and clinical characteristics of ill persons, suspected source of infection, and name or initials of the person who recorded information on the form. A quick analysis of data collected on these forms may suggest avenues of investigation. For example, if most cases involve toddler-age children a day

care source may be likely. Illness in predominantly older children may indicate a recreational water exposure, or eating at a particular function or food establishment. Instances of disease with no age, sex, or geographic clustering suggest that drinking water or a widely distributed food product may be worthy of more intensive investigation. Data from these forms may also provide a reasonable estimate of the time period when exposure may have occurred.

- Review laboratory practices and laboratory records. Ensure that the cryptosporidiosis diagnosis is correct and that an increase in diagnoses truly represents an outbreak. An apparent outbreak may, in fact, be an artifact of reporting or a laboratory error. The following should be addressed when an increase in the number of cryptosporidiosis diagnoses is being reported by a laboratory:
 - Send a representative sample of specimens reported as positive to an outside reference laboratory (e.g., state health department) for verification.
 - Compare the current weekly or monthly number of cases with a) the number of cases diagnosed in the previous week or month and b) with the number of cases in the same week or month of the previous year.
 - Determine if there has been a change in the total *number* of stools submitted for *Cryptosporidium* testing that might artificially increase the number of cases. A sudden change in the number of tests requested by physicians may cause an increase in the number of cases detected, but this increase may not signal an outbreak.
 - Determine whether there has been a change in the *proportion* of stools that test positive for *Cryptosporidium*. An increase in the percentage of stools testing positive (number of stools positive divided by number of stools submitted for *Cryptosporidium* testing) is a more reliable index of a true increase in the occurrence of cases than the total number of stools positive.
 - Determine whether there has been a change in the method(s) used for detection of *Cryptosporidium* or in laboratory personnel that might have caused a greater number of tests to be done or to be read as positive.
 - Determine whether other nearby laboratories have seen similar increases.
 - Determine whether the laboratory reporting most of the cases recently began providing services to a new client, e.g., an AIDS clinic, a day care center, or a large HMO that might explain a sudden increase in the number of specimens testing positive for *Cryptosporidium*.
- Establish a case definition for survey purposes. A case definition is a standard set of criteria for deciding whether an individual should be classified as having a disease. The common elements of a cryptosporidiosis case definition include:
 - laboratory-confirmed infection
 - three or more watery stools per day lasting for 3 or more days in the 2 weeks (or other time period of interest) before the date that the questionnaire is administered.
- Survey health care facilities for evidence of increased numbers of patients with diarrhea or laboratory-confirmed cryptosporidiosis. The survey should be designed to ascertain the number of cases diagnosed within a defined time period (usually several weeks to a month around the time that the outbreak is thought to have occurred). Any impressions

of an increase in the number of cases (case definition to be established by the investigator) identified during this period should be further assessed by comparing the current number of cases with a) the number of cases identified the preceding month and b) the number of cases identified for the corresponding time period in the previous year at these facilities. An increase in cases compared with the previous week or month and compared with the same week or month in the previous year supports the hypothesis that an outbreak may be occurring. Bear in mind, however, that what appears to be an outbreak may be merely the finding or reporting of cases that were not reported previously, but are now being detected or reported as a result of media attention, improved surveillance, or other change in methods for case ascertainment. Sources of information include surveys of hospital and clinic emergency departments and of physicians offices, records of pharmacy sales of anti-diarrheal medications, records of patients with diarrhea at nursing homes (on and off the suspected water supply), and records of school absenteeism.

- Analyze epidemiologic data from all sources including self-reported cases, health care facilities' surveys, questionnaire data from specific epidemiologic surveys, and water and environmental data. The list of activities below is intended to provide a starting point for data analysis. In some outbreaks the preliminary analysis may be adequate to make recommendations; in many other outbreaks preliminary analysis will serve to identify areas that will require more sophisticated statistical analysis or further epidemiologic study to be able to resolve important questions.

Note: If at any time throughout the entire investigative or analytical process, an ongoing, potentially hazardous source of illness (e.g., food, water) is discovered, recommendations for the community should be decided upon and immediately publicized (see Chapters 1 and 4). Regulatory actions may also need to be taken.

- Determine whether the outbreak is ongoing. Review line listing and epidemiologic questionnaire data for dates of onset of illness for the most recent cases. The incubation period for cryptosporidiosis is estimated to range from 2 to 10 days. Therefore, if persons are reporting onset of illness in the past 1 to 2 weeks, transmission may still be occurring.
- Chart an epidemic curve. Is it consistent with a common source outbreak, i.e., does it have a steep upward slope with a sharp peak? Does the curve appropriately reflect the effects of a control program, e.g., if a boil water advisory was issued, was there a sharp decline in cases following the advisory?
- Plot cases by location of residence on a map to determine if they are clustered in one area or randomly distributed. Is the distribution of cases consistent with the hypothesized mode of transmission?
- Summarize the age, sex, and ethnic distribution of cases.
- Determine whether drinking tap water is the major risk factor. Were persons with illness more likely to drink tap water without applying home water treatment than were persons who are not ill? Did drinking alternative water, e.g., bottled water, home-filtered water, private well water, or municipal water from another source protect against infection?
- Evaluate other risk factors such as attendance at a day care center, recent travel to a developing country, contaminated food, animal exposures, etc.

2. Is water a likely source of infection?

If age, sex, and geographic distribution of cases indicates that only people using a specific water supply are affected, collect additional water data. The objectives are to determine rapidly if drinking water is the probable source of infection and to decide if a boil water advisory should be issued.

- Obtain water quality and treatment data for the community affected by the suspected outbreak. (Chapter 1 discusses how to form a task force to assess the local drinking water supply and treatment before a possible outbreak. Information may already have been collected by the task force for the first three items outlined below.)
 - Identify source(s) and type(s) of water (e.g., surface, spring, well).
 - Determine type(s) of treatment (e.g., filtration type, if any; disinfection type, if any).
 - Determine the number of water supplies serving the community and the parts of the community that each serves. Are cases clustered in one water service area?
 - Review recent water quality data (e.g., coliform counts, turbidity levels, disinfectant residuals). Graph the peak turbidity levels recorded each day before and during the suspected outbreak period. Were there any recent changes in the water treatment protocol, temporary malfunctions, or treatment failures shortly before cases began to be reported? Have there been chronic water filtration problems, e.g. frequent turbidity spikes in the 0.3 - 1.0 NTU range that may have allowed *Cryptosporidium* to pass through without violating filtration standards?
 - Determine whether there were any recent repairs to the treatment plant or distribution system. If so, does the distribution of cases correspond to the site of repair?
 - Determine whether system pressure recently fell to less than 5 psi.
 - Determine whether there was vandalism and/or unauthorized access to facilities.
 - Determine whether there have been any recent changes in the watershed (e.g., drought, flood, land use, sewage overflow) that may have increased the chances for *Cryptosporidium* contamination of source water.
 - Discuss water quality and treatment data with the local water treatment plant engineer or the state water-treatment engineer, and/or the EPA engineer that may be assisting in the investigation. This will minimize the risk of misinterpreting data.
- If the outbreak appears to be caused by drinking water:
 - Consider issuing a boil water advisory if there is evidence that a hazard still exists.
 - Consider sampling raw and finished (treated) water for *Cryptosporidium*. This should be done as early in the outbreak as possible in order to increase chances of detecting the organism.
 - Consider sampling filter backwash material for *Cryptosporidium*.
 - Consider locating water for *Cryptosporidium* testing that likely was drawn during the probable period when people were exposed, e.g., stored water such as recently filled swimming pools or water beds, water in dead-end mains, or commercial ice.
 - Contact health departments and water utilities in other communities that could be affected by the same water source, i.e., if a river is the source of drinking water, contact communities upstream and downstream to alert them to a possible problem and ask for information about any recent increases in *Cryptosporidium* diagnoses or diarrhea.

- If recreational water is suspected, sample lake, river, or pool water for *Cryptosporidium*. If pool water is tested, skim off the thin layer of material resting on top of the filter bed and/or gather the filter backwash material for examination for *Cryptosporidium*.

3. What to do if data indicate an outbreak is occurring.

A thorough epidemiologic investigation is often desired to better define the size, geographic extent, and cause of an outbreak as well as to identify the specific activities (exposure risk factors) that lead to infection.

Note: If at any time an outbreak appears to be occurring, it should be reported to your state department of health which can provide both technical and field assistance. Experienced state staff can often improve the study design, provide guidance on interim control strategies, and facilitate more rapid completion of the investigation. Emergency numbers for state personnel are listed in the appendix of this handbook. Ideally an interagency task force will already have been established (see Chapter 1) and a coordinated response plan agreed upon. Task force members should be kept fully apprised of all actions taken when an outbreak appears to be occurring.

- **Plan the investigation.** Random digit telephone surveys and case-control studies are two types of study design commonly used in outbreak investigations in which drinking water is suspected. Random digit dialing surveys are useful for determining when the outbreak began, the magnitude of the outbreak, geographic distribution of cases, and the demographic profile and symptoms of people reporting illness. Telephone surveys are also useful in determining the impact of control measures (e.g., boil water advisories).

Case-control studies are used primarily to identify the type(s) of exposure (e.g., water, food, animals, day care, etc) that result in infection. The major objective of the study is to find out what people with *Cryptosporidium* (cases) did to acquire infection that people without the infection (controls) did not do. Case-control studies require that methods be developed to identify cases (e.g., patients who have laboratory-confirmed cryptosporidiosis), and controls (uninfected persons) who are representative of the population from which the cases are drawn. Exposures to infection that are more common among cases than among controls are then identified using an epidemiologic questionnaire. The questionnaire must be developed to ensure critical evaluation of *all* likely sources of infection.

- Identify a suitable study population(s). Investigations can be community-wide or restricted to smaller groups. Early in an investigation, quick studies of small groups such as people in residential care institutions may be helpful. For example, comparing attack rates (number of ill persons divided by total number of persons exposed) for individuals in nursing homes in the same community but with different water supplies can be useful in rapidly assessing the role of drinking water. A high rate of infection in residents of nursing homes using a suspected water source vs. a low rate of infection in a similar facility on another water supply is strong evidence for waterborne transmission because individuals in such institutions have few other exposures to *Cryptosporidium*. For larger case-control studies, consult your state health department for assistance in

determining an appropriate sample size and number of controls to use per case.

- Identify suitable controls.

This can often be the most important and difficult part of an epidemiologic investigation. Even the experienced epidemiologist will benefit from consultation with another epidemiologist.

- Design a questionnaire.

Design a standardized questionnaire to use in gathering information on reported or known cases. If a case-control study is planned, develop a similar questionnaire for controls. A sample questionnaire for case-patients is provided in the appendix as Figure E. The sample questionnaire is intended only as a guide; it will require modification to fit the particular circumstances surrounding the outbreak investigated. Below is a brief checklist of important variables to consider when developing a questionnaire:

- Demographic information:

Age, sex, ethnicity, home, work, and school addresses. (If the entire address is not available, obtain the zip code to use as a minimum indication of where people live.)

- Clinical:

Onset date of illness

Duration of illness

Symptoms and severity of illness

Immune status

Chronic medications taken

Medical assistance sought

Doctor's name

 Diagnosis

 Laboratory test results (if any)

 Hospitalization

- Exposures:

Drinking water

 Sources of drinking water at home, work, and school

 Consumption of unpurified lake or river water (e.g., while camping)

 Exclusive or partial use of purified water

 Consumption of water or reconstituted drinks in restaurants, stores, or social settings

 Amount of water consumed daily *before* becoming ill

Food

 Dining out

 Consumption of unpasteurized beverages or other products

Children

 Number in diapers

 Number who attend day care

 Number in diapers who attend day care

Other people
Household contacts with diarrhea
Visiting ill persons
Sexual contact
Animals
Pets
Farms
Petting zoos
Travel history

- Collect the data
 - Random digit dialing survey
Select a sample of names from a residential telephone directory. Depending on the number of people to be sampled, select every 10th, 20th, 30th or other number of persons listed. Seek the telephone company's guidance on how to call residential listings only. Use a computer program to randomly select telephone numbers to call.
 - Case-control study
Administer your questionnaire to all or a representative sample of persons with illness. For example, if there are a large number of cases, you might want to sample 10-30% of them. Contact your state health department for assistance in determining an appropriate sample size and number of controls per case.
- Other groups to consider studying:
Consider investigating persons who had time-limited exposures to the water in question (e.g., flight attendants, business travelers, out-of-town attendees at sporting events, weddings, etc). Studies of these groups are useful for determining when the problem began and how long exposure continued. These studies also provide useful information about the incubation period and dose (minimum amount of water consumed that results in infection).
- Draw conclusions and make recommendations. After analysis of epidemiologic and environmental data, conclusions should be summarized in an outbreak report. Special attention should be given to discussing the most likely cause(s) of the outbreak and development of recommendations that would prevent future outbreaks.

II. News Release Information

This is a sample of information to include in a news release to be used if there is a cryptosporidiosis outbreak in your community, or if *Cryptosporidium* is found in your community's water.

Extra precautions for people with weakened immune systems:

In persons with weakened immune systems, cryptosporidiosis can be chronic and life-threatening. Persons with weakened immune systems may wish to take these extra precautions to protect themselves against cryptosporidiosis.

- Drink only water that has been purified by boiling for 1 minute or by distilling.
- Trust only water filters with any of the following information on the label to remove *Cryptosporidium*: reverse osmosis; *absolute* pore size of 1 micron or smaller; tested and certified by NSF Standard 53 for cyst removal; tested and certified by NSF Standard 53 for cyst reduction. Bottled water treated by reverse osmosis or with any of these filters, and distilled water, will also be free of *Cryptosporidium*. Canned or bottled carbonated (bubbly) drinks will also be free of *Cryptosporidium*.
- Wash, with purified water, and/or cook all food.
- Do not swim in lakes, rivers, streams, public pools, or water parks and do not use jacuzzis.
- Avoid any sexual practice that might involve contact with stool.
- Avoid touching young farm animals.
- Avoid touching the stool of animals.

Sources of infection

- Cryptosporidiosis is the disease caused by the parasite *Cryptosporidium parvum*. *Cryptosporidium* infection can be caused by swallowing only a small amount of cryptosporidia. *Cryptosporidium* infection can be contracted by:
 - eating contaminated food or drinking contaminated water;
 - touching the stool of infected persons or animals, then not washing your hands well before touching your mouth;
 - touching anything contaminated with stool, then not washing your hands well before touching your mouth.
- Cryptosporidiosis can be prevented by always washing hands thoroughly, after any contact with animals or soil, after changing diapers, and before eating.

Symptoms

- Symptoms of cryptosporidiosis, the disease caused by *Cryptosporidium*, include diarrhea, stomach cramps, fatigue, nausea, vomiting, or a slight fever.
- Symptoms usually start 2 to 10 days after swallowing *Cryptosporidium*.
- In a healthy person with a normal immune system, symptoms normally will last for 2 weeks or less, although individuals may recover, then get sick again. Some people with cryptosporidiosis may not get sick, but they can still pass the disease to others.
- After infection, an individual can pass cryptosporidia in their stool for up to 2 months, and may give the disease to other people.

- Persons with severely weakened immune systems may have cryptosporidiosis for a longer time and should talk with their health care providers to learn how to avoid infection. The CDC AIDS Hotline, 1-800-342-2437, provides more information on cryptosporidiosis.

Information for infected persons

- Persons infected with *Cryptosporidium* should:
 - wash their hands regularly, especially before preparing food and after using the toilet;
 - avoid any sexual contact, especially sexual contact involving exposure to feces;
 - avoid swimming in public bathing areas (swimming pools, lakes, water parks, etc.) while they have diarrhea and for several weeks after it clears up.
- Diarrhea can cause dehydration. Individuals with diarrhea should contact their health care provider, who may prescribe an oral rehydration mix.
- Some drugs, such as paromomycin, may reduce the symptoms of cryptosporidiosis, but no drug now known can cure it. Therefore, prevention of infection is the key.

III. Sample FAQ (Frequently Asked Questions)

Anticipate questions you might be asked by the media and the public during a cryptosporidiosis outbreak and how to answer them. Here are some examples.

Q. What is *Cryptosporidium* and how is it transmitted?

A. *Cryptosporidium* is a microscopic parasite that is found in the feces of infected humans or animals. Humans are infected when they ingest contaminated water or food, or touch contaminated objects, then touch their mouth before washing their hands well. Cryptosporidiosis, the disease caused by *Cryptosporidium*, is one of the most common causes of diarrhea among persons with AIDS in the U.S.

Q. What are the symptoms?

A. Symptoms of *Cryptosporidium* infection in persons with normal immune systems include diarrhea that lasts 1 to 2 weeks, often accompanied by abdominal cramps, fatigue, nausea, vomiting, and low-grade fever. People usually develop symptoms 2 to 10 days after ingesting the parasite.

In persons with weakened immune systems, cryptosporidiosis can be chronic and life-threatening.

Q. Who is at risk for severe cryptosporidiosis?

A. People at risk for severe cryptosporidiosis include people with AIDS, people who have cancer, or organ or bone marrow transplant patients who are taking drugs that suppress the immune system, and people who are born with genetically weakened immune systems.

Q. Why is *Cryptosporidium* a problem in drinking water?

A. *Cryptosporidium* is a problem because most water from lakes, rivers, and streams, contains some of the microscopic parasite. Most communities get their drinking water from these “surface” sources, rather than from underground sources such as wells. *Cryptosporidium* is highly resistant to chlorine and other disinfectants, which are used to kill bacteria and viruses in drinking water. In addition, *Cryptosporidium* is so small that it is not easily removed from water by the type of filters used in conventional municipal water treatment.

Over half of the tested public water supplies that use surface water have been found to have small amounts of *Cryptosporidium* in the water sent to homes and businesses.

Q. How can I tell if there is *Cryptosporidium* in my drinking water?

A. You cannot tell without expensive, special tests. These tests are not very good for home use, and are not always reliable.

Q. Is there a cure for *Cryptosporidium* infection?

A. No. Some drugs, such as paromomycin (PAR-o-mo-my-sin), may reduce the symptoms of cryptosporidiosis, but no drug now known can cure it. Diarrhea can cause dehydration. Persons with diarrhea should contact their health care provider who may recommend an oral rehydration therapy mix.

Q. Should I take extra protective measures?

A. It depends on your health and your drinking water. If you have AIDS, if you have cancer or if you have had an organ or bone marrow transplant and are taking drugs that weaken your immune system, or if you were born with a genetically weakened immune system, you may want to take extra measures. You should talk to your health care provider regarding the level of your risk and on how to reduce it.

If you have a healthy immune system, you are at less risk for cryptosporidiosis, but you may want to consider the quality of your drinking water. Unfortunately, assessing the risk of *Cryptosporidium* infection from your drinking water is not easy. Tests for *Cryptosporidium* in public water supplies are not easy to interpret. A positive test does not necessarily mean there *is* a risk, and a negative test does not necessarily mean there is *no* risk. If your drinking water comes from a surface source (lake, stream, or river) that is unfiltered, or one that is located downstream from a sewage treatment facility or runoff from farming, your water may be at increased risk of containing *Cryptosporidium*.

Q. What can immunosuppressed persons do to avoid infection with *Cryptosporidium*?

A. Avoid sexual practices that may result in exposure to feces.

Avoid drinking water directly from lakes, rivers, ponds, or streams.

Avoid swimming in lakes, rivers, streams, ponds, public swimming pools, or recreational water parks.

Avoid working with diaper-aged children.

Avoid contact with feces of all animals, particularly young farm animals such as calves.

Always wash hands thoroughly:

- after any contact with animals;
- after any contact with soil (e.g., gardening);
- after changing diapers;
- before eating, or preparing food.

Consume only water that has been purified by boiling for 1 minute, or by treatment with certain filters. The CDC AIDS Hotline (1-800-342-2437) has information on filters that remove *Cryptosporidium* from water.

IV. Protocols for Special Audiences and Contingencies

The following pages contain information for various specialized audiences and contingencies for use if a boil water advisory is issued. You may wish to release this information to the appropriate persons individually (i.e., not as a news release). You may also want to set up telephone hotline numbers to handle questions specific to these audiences. These pages are designed, in a camera-ready format, for individual release, by fax or similar methods, to the appropriate persons at the institutions indicated.

Experience has shown that hotlines operate most effectively with a single number (answered automatically or personally) with one consistent message. Callers can be directed to further basic information via audio, fax, Internet, or other means. Callers can also be directed to medical, sanitation, water, or other appropriate personnel. In this way, callers with general questions can be managed at a general level and callers with specific technical questions can be efficiently directed to appropriate personnel. Also, the following protocols can be distributed more appropriately and efficiently on demand if callers are grouped in this manner. Experience has shown that hotlines are especially useful for addressing the needs of commercial establishments and the public.

Hospitals and Clinics

During a boil water advisory

- Patients and employees should not consume water that has not been disinfected, ice or drinks made with water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute 1 micron” filter or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- All employees with diarrheal illness should be regulated by standard rules of exclusion from work.
- Disinfect dishes via dishwashing machines that have a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122°F for 5 minutes or 162°F for 1 minute.
- Use only disinfected water to treat skin wounds.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.
- Backwash pool filters and change media or water.
- Run water softeners through a regeneration cycle.
- Drain and refill hot water heaters set below 113°F.
- Resume usual bathing practices and care for patients with breaks in the skin.

Renal Dialysis Units

During a boil water advisory

- Patients and employees should not consume water that has not been disinfected, ice or drinks made with water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute 1 micron” filter, or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- All employees with diarrheal illness should be regulated by standard rules of exclusion from work.
- Disinfect dishes via dishwashing machines that have a dry cycle or a final rinse that exceeds 113° F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute.
- Use only disinfected water to treat skin wounds.
- Monitor patients closely for signs and symptoms of gastrointestinal illness.

If your water system is treating water chemically beyond normal levels advise dialysis units to

- Sample water for chemical analysis to ensure compliance with AAMI standards.
- Conduct chlorine/chloramine tests to ensure compliance with AAMI standards.
- Monitor water system gauges once per shift.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.
- Backwash pool filters and change media or water.
- Run water softeners through a regeneration cycle.
- Drain and refill hot water heaters set below 113°F.
- Resume usual bathing practices and care for patients with breaks in the skin.

Nursing Homes

During a boil water advisory

- Residents and employees should not consume water that has not been disinfected, ice or drinks made with water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute one micron” filter, or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- All employees with diarrheal illness should be regulated by standard rules of exclusion from work.
- Disinfect dishes by washing in dishwashing machines that have a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.
- Backwash pool filters and change media or water.
- Run water softeners through a regeneration cycle.
- Drain and refill hot water heaters set below 113° F.
- Resume usual bathing practices and care for residents with breaks in the skin.

Day-care Facilities

During a boil water advisory

- Children and employees should not consume water that has not been disinfected, ice or drinks made with water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute one micron” filter, or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- All employees with diarrheal illness should be regulated by standard rules of exclusion from work.
- Disinfect dishes by washing in dishwashing machines that have a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.
- Backwash pool filters and change media or water.
- Run water softeners through a regeneration cycle.
- Drain and refill hot water heaters set below 113°F.

Prevention and Control of Cryptosporidiosis in Day-care Facilities

Effective measures include

- frequent hand washing, by both staff and children;
- clear separation of diapering and food-handling areas and responsibilities;
- the use of overclothes or diapers capable of retaining liquid feces;
- disinfection of diaper areas and toys;
- excluding children with diarrhea;
- use of disposable gloves when changing diapers;
- use of disposable paper to cover diaper-changing areas;
- separation of diaper-changing areas from children's play areas.

No disinfectant is guaranteed to be completely effective against *Cryptosporidium*. However, hydrogen peroxide (3%) is usually effective. Ammonia can also be used but it has a strong odor and, if accidentally mixed with bleach or other chlorine-containing solutions, produces hazardous chlorine gas.

In the event of an outbreak, to reduce the level of potentially infectious *Cryptosporidium*, clean and disinfect toys, table tops, and high chairs more frequently than usual (at least twice daily). Dishwasher-safe toys may be washed in a commercial dishwasher that has a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute. Cloth toys may be washed and heat-dried in a clothes dryer for 30 minutes.

If there is an increase of diarrhea, parents should be informed of the symptoms of cryptosporidiosis, how it is transmitted, the risk of severe illness in immunocompromised persons, and necessary control measures.

Dental Offices

During a boil water advisory

- Reschedule appointments for immunocompromised patients, such as HIV-positive individuals, chemotherapy and transplant patients, and congenitally immunocompromised individuals.
- Warn your patients before treatment that they are at greater risk for cryptosporidiosis if they are immunocompromised, and that they may wish to reschedule their treatment after the boil water advisory is lifted. Explain to all patients the current situation regarding water and indicate what procedures your office is following to protect their health.
- Patients and employees should not consume water that has not been disinfected, or ice or drinks made from water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute one micron” filter or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- All employees with diarrheal illness should be regulated by standard rules of exclusion from work.
- Turn off the water supply to high-speed handpieces. Using disinfected water, flow water out of a bulb syringe when using high-speed handpieces.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.

Commercial Establishments (Restaurants, Hotels, Convenience Stores)

During a boil water advisory

- Do not serve or consume water that has not been disinfected, ice or drinks made with water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a reverse osmosis filter, an “absolute one micron” filter, or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- Disinfect dishes by washing in dishwashing machines that have a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute.

Upon rescinding a boil water advisory

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer’s specifications. This may vary from fixture to fixture. Consult your facilities engineer and/or the manufacturer when re-starting the equipment.
- Managers of large buildings with water-holding reservoirs should consult with their facility engineer and health department about draining the reservoir.
- Run cold water faucets for 1 minute before using the water.
- Run drinking fountains for 1 minute before using the water.
- Backwash pool filters and change media or water.
- Run water softeners through a regeneration cycle.
- Drain and refill hot water heaters set below 113°F.

Commercial Ice Maker Users

Upon rescinding a boil water advisory

- A. Flush the water line to the machine inlet:
 - 1. Close the valve on the water line behind the machine and disconnect the water line from the machine inlet.
 - 2. Open the valve, run 5 gallons of water through the valve, and dispose of the water.
 - 3. Close the valve.
 - 4. Reconnect the water line to the machine inlet.
 - 5. Open the valve.
- B. Flush the water lines in the machine:
 - 1. Turn on the machine.
 - 2. Make ice for 1 hour and dispose of the ice.
- C. Clean and disinfect all parts and surfaces that come in contact with water and ice, following the manufacturer's instructions.

Public Users of Public Water Supplies

During a boil water advisory

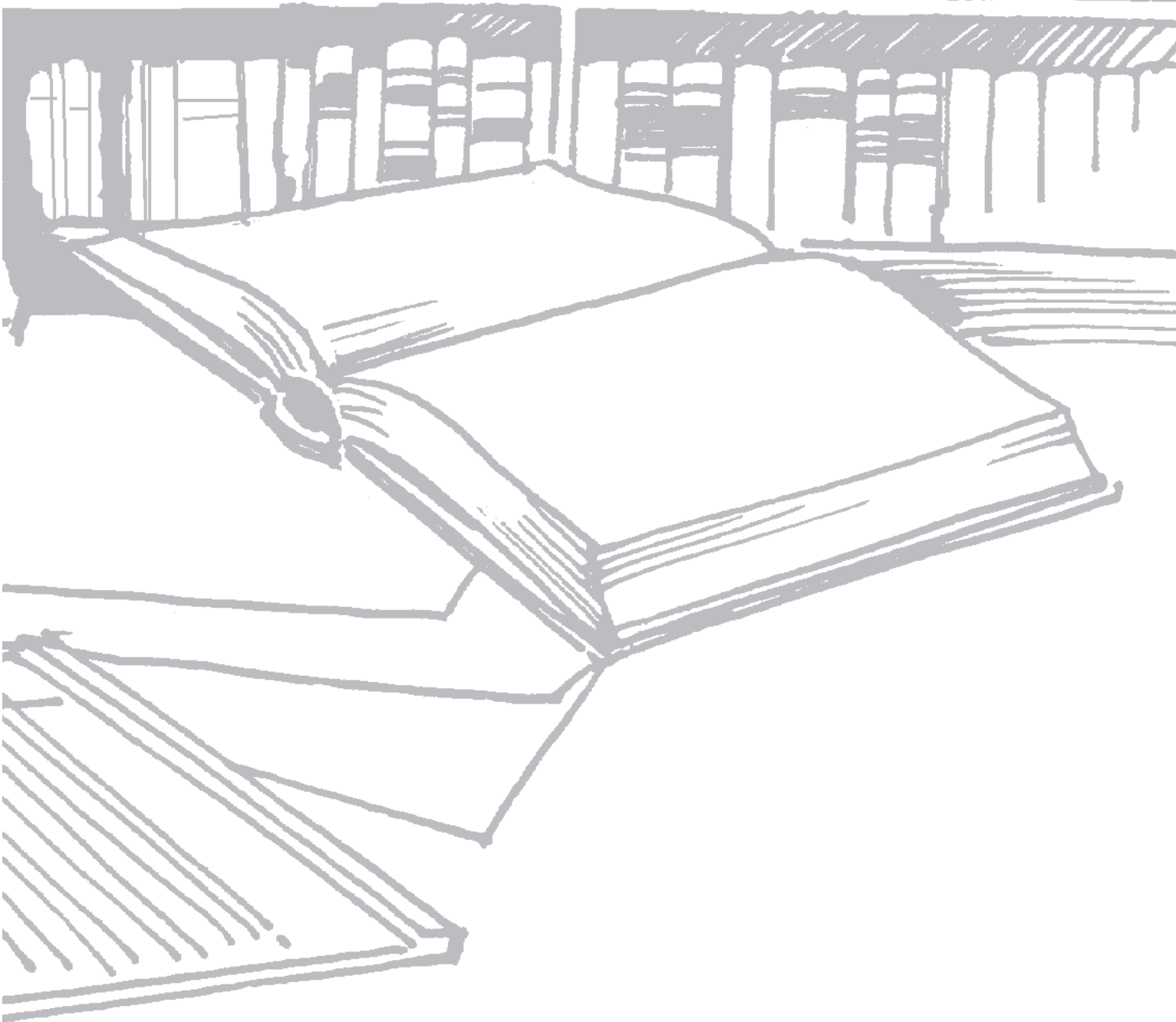
- Do not consume water that has not been disinfected, ice or drinks made from water that has not been disinfected, or raw foods rinsed with water that has not been disinfected.
- Disinfect water of *Cryptosporidium* by
 - boiling at a rolling boil for 1 minute
 - distilling
 - filtering through a “reverse osmosis” filter, an “absolute one micron” filter, or a filter certified to remove *Cryptosporidium* under NSF International Standard #53 for either “cyst removal” or “cyst reduction.” Ultraviolet light treatment of water is *not* effective against *Cryptosporidium*, at normally used levels.
- Disinfect dishes by washing in dishwashing machines that have a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122° F for 5 minutes or 162° F for 1 minute.

Upon rescinding a boil water advisory

- Flush household pipes/faucets: run *all* cold water faucets for 3 minutes each.
- Flush home automatic ice makers: make three batches of ice cubes and discard all three batches.
- Run water softeners through a regeneration cycle.
- Flush drinking fountains: run continuously for 1 minute.
- Flush water coolers: run coolers with direct water connections for 5 minutes.

CHAPTER 6

Educational Information



Chapter 6- Educational Materials

Preventing Cryptosporidiosis: A Guide for Persons With HIV/AIDS

Chair: Thomas Navin, Centers for Disease Control and Prevention
Chet Anderson, Metropolitan Water District of Southern California
Paul S. Berger, U.S. Environmental Protection Agency
Scott A. Damon, Centers for Disease Control and Prevention
Linda A. Fisher, St. Louis County Health Department
Susan Goldstein, Centers for Disease Control and Prevention
Dennis D. Juranek, Centers for Disease Control and Prevention
Jonathan E. Kaplan, Centers for Disease Control and Prevention
Iris L. Long, AIDS Coalition to Unleash Power
Lisa Ragain, National Association of People With AIDS
Anne Seeley, New York City Department of Environmental Protection
Rosemary Soave, New York Hospital-Cornell Medical Center
Tyrone Wilson, International Bottled Water Association
Robert Wood, Seattle-King County Department of Health

Preventing Cryptosporidiosis: A Guide for the Public

Chair: Kathleen Blair, City of Milwaukee Health Department
Chet Anderson, Metropolitan Water District of Southern California
Scott A. Damon, Centers for Disease Control and Prevention
Alexis M. Milea, California Department of Health Services
Thomas Outlaw, Association of State Drinking Water Administrators
Fred Pontius, American Water Works Association

Preventing Cryptosporidiosis: A Guide to Water Filters and Bottled Water

Chair: Dennis D. Juranek, Centers for Disease Control and Prevention
Chet Anderson, Metropolitan Water District of Southern California
Paul S. Berger, U.S. Environmental Protection Agency
Susan Boutros, Environmental Associates, Ltd.
Nancy Culotta, NSF International
Scott A. Damon, Centers for Disease Control and Prevention
Joseph F. Harris, Water Quality Association
Anita K. Highsmith, Centers for Disease Control and Prevention
George J. Jackson, Food and Drug Administration
Henry Kim, Food and Drug Administration
Iris L. Long, AIDS Coalition to Unleash Power
Michael Miller, NSF International
Michael Redman, National Soft Drink Association
Terry Troxell, Food and Drug Administration
Tyrone Wilson, International Bottled Water Association

The following camera-ready fact sheets can be duplicated or faxed as is. The information for persons with HIV and AIDS is also available in pamphlet form from the CDC National AIDS Hotline at 1-800-342-2437.

PREVENTING CRYPTOSPORIDIOSIS: A GUIDE FOR PERSONS WITH HIV AND AIDS

What is cryptosporidiosis?

Cryptosporidiosis (krip-toe-spo-rid-e-o-sis), often called “crypto,” is a disease caused by a one-celled parasite, *Cryptosporidium parvum*, also known as “crypto.” Crypto, which cannot be seen without a very powerful microscope, is so small that over 10,000 of them would fit on the period at the end of this sentence.

What are the symptoms of crypto ?

Although sometimes persons infected with crypto do not get sick, when they do get sick they can have watery diarrhea, stomach cramps, an upset stomach, or a slight fever. In some cases, persons infected with crypto can have severe diarrhea and lose weight. The first symptoms of crypto may appear 2 to 10 days after a person becomes infected.

How does crypto affect you if your immune system is severely weakened ?

In people with AIDS and in others whose immune system is weakened, crypto can be serious, long-lasting and sometimes fatal. If your CD4+ cell count is below 200, crypto is more likely to cause diarrhea and other symptoms for a long time. If your CD4+ count is above 200, your illness may not last more than 1 to 3 weeks or slightly longer. However, you could still carry the infection, which means that the crypto parasites are living in your intestines, but are not causing illness. As a carrier of crypto, you could infect other people. If your CD4+ count later drops below 200, your symptoms may reappear.

How is crypto spread?

You can get crypto by putting anything in your mouth that has touched the “stool,” (bowel movement) of a person or animal with crypto. You can also get crypto by touching your mouth before washing your hands after touching the stool of infected persons, or touching the stool of infected animals, or touching soil or objects contaminated with stool. Drinking contaminated water or eating contaminated food can also give you crypto. Cryptosporidiosis is *not* spread by contact with blood.

Can crypto be treated ?

Yes, but no drug has been found yet to cure it. Some drugs, such as paromomycin, may reduce the symptoms of crypto and new drugs are being tested. If you think you have crypto, or if you just have diarrhea, talk with your health care provider about testing and treatment. Diarrhea can cause dehydration. You should drink plenty of fluids to prevent dehydration. Oral rehydration powders and sportsade drinks can also help prevent dehydration.

How can I protect myself from crypto?

You can reduce your risk of getting crypto. The more steps you take, the less likely you are to get crypto. These actions will also help protect you against other diseases.

1. Wash your hands.

Washing your hands often with soap and water is probably the single most important step you can take to prevent crypto and other illnesses. Always wash your hands before eating and preparing food. Wash your hands well after touching children in diapers; after

touching clothing, bedding, toilets, or bed pans soiled by someone who has diarrhea; after gardening; any time you touch pets or other animals; and after touching anything that might have had contact with even the smallest amounts of human or animal stool, including dirt in your garden and other places. Even if you wear gloves when you do these activities you should still wash well when you finish. Children should be supervised by adults to make sure they wash their hands well.

2. Practice safer sex.

Infected people may have crypto on their skin in the anal and genital areas, including the thighs and buttocks. However, since you cannot tell if someone has crypto, you may want to take these precautions with any sex partner:

“Rimming” (kissing or licking the anus) is so likely to spread infection that you should avoid it, even if you and your partner wash well before.

Always wash your hands well after touching your partner’s anus or rectal area.

3. Avoid touching farm animals.

If you touch a farm animal, particularly a calf, lamb, or other young animal, or visit a farm where animals are raised, wash your hands well with soap and water before preparing food or putting anything in your mouth. Do not touch the stool of *any* animal. After you visit a farm or other area with animals, have someone who is not HIV infected clean your shoes, or wear disposable gloves if you clean them yourself. Wash your hands after taking off the gloves.

4. Avoid touching the stool of pets.

Most pets are safe to own. However, someone who is not HIV infected should clean their litter boxes or cages, and dispose of the stool. If you must clean up after a pet, use disposable gloves. Wash your hands afterwards. The risk of getting crypto is greatest from pets that are less than 6 months old, animals that have diarrhea, and stray animals. Older animals can also have crypto, but they are less likely to have it than younger animals. If you get a puppy or kitten that is less than 6 months old, have the animal tested for crypto before bringing it home. If any pet gets diarrhea, have it tested for crypto.

5. Be careful when swimming in lakes, rivers, or pools, and when using hot tubs.

When swimming in lakes, rivers, or pools, and when using hot tubs, avoid swallowing water. Several outbreaks of crypto have been traced to swallowing contaminated water while swimming. Crypto is not killed by the amount of chlorine normally used in swimming pools and water parks. Crypto also can remain alive in salt water for several days, so swimming in polluted ocean water may also be unsafe.

6. Wash and/or cook your food.

Fresh vegetables and fruits may be contaminated with crypto. Therefore, wash well all vegetables or fruit you will eat uncooked. If you take extra steps to make your water safe (see next page for ways to do so), use this safe water to wash your fruits and vegetables. When you can, peel fruit that you will eat raw, after washing it. Do not eat or drink unpasteurized milk or dairy products. Cooking kills crypto. Therefore, cooked food and

heat-processed foods are probably safe if, after cooking or processing, they are not handled by someone infected with crypto, or exposed to possibly contaminated water.

7. **Drink safe water.**

Do not drink water directly from lakes, rivers, streams, or springs. Because you cannot be sure if your tap water contains crypto, you may wish to avoid drinking tap water, including water or ice from a refrigerator ice-maker, which are made with tap water. Because public water quality and treatment vary throughout the United States, always check with the local health department and water utility to see if they have issued any special notices about the use of tap water by HIV-infected persons. You may also wish to take some additional measures: boiling your water, filtering your water with certain home filters, or drinking certain types of bottled water. Processed, carbonated (bubbly) drinks in cans or bottles are probably safe, but drinks made at a fountain might not be because they are made with tap water. If you choose to take these extra measures, use them all the time, not just at home. If the public health department advises boiling the water, do not drink tap water unless you boil it. You could also use one of the bottled waters described below.

Boiling water: Boiling is the best extra measure to ensure that your water is free of crypto and other germs. Heating water at a rolling boil for 1 minute kills crypto, according to CDC and EPA scientists. After the boiled water cools, put it in a clean bottle or pitcher with a lid and store it in the refrigerator. Use the water for drinking, cooking, or making ice. Water bottles and ice trays should be cleaned with soap and water before use. Do not touch the inside of them after cleaning. If you can, clean water bottles and ice trays yourself.

Filtering tap water: Not all available home water filters remove crypto. All filters that have the words “reverse osmosis” on the label protect against crypto. Some other types also work, but not all filters that are supposed to remove objects 1 micron or larger from water are the same. Look for the words “**absolute** 1 micron.” Some “1 micron” and most “**nominal** 1 micron” filters will *not* work against crypto. Also look for the words “Standard 53” *and* the words “cyst reduction” or “cyst removal” for an NSF-tested filter that works against crypto.

To find out if a particular filter removes crypto, contact NSF International (3475 Plymouth Road, P.O. Box 130140, Ann Arbor, MI 48113-0140, tel: 1-800-673-8010, fax: 1-313-769-0109), an independent testing group. Ask NSF for a list of “Standard 53 Cyst Filters.” Check the model number on the filter you intend to buy to make sure it is *exactly* the same as the number on the NSF list. Look for the NSF trademark on filters, but be aware that NSF tests filters for many different things. Because NSF testing is expensive, many filters that may work against crypto have not been tested. Reverse osmosis filters work against crypto whether they have been tested by NSF or not. Many other filters not tested by NSF also work if they have an absolute pore size of 1 micron or smaller.

If you choose to buy a filter, look for this information on the label:

<p>Filters designed to remove crypto (any of the four messages below on a package label indicate that the filter should be able to remove crypto)</p>
Reverse osmosis (with or without NSF testing)
Absolute pore size of 1 micron or smaller (with or without NSF testing)
Tested and certified by NSF Standard 53 for cyst removal
Tested and certified by NSF Standard 53 for cyst reduction

<p>Filters labeled only with these words may not be designed to remove crypto</p>
Nominal pore size of 1 micron or smaller
One micron filter
Effective against <i>Giardia</i>
Effective against parasites
Carbon filter
Water purifier
EPA approved - Caution: EPA does not approve or test filters.
EPA registered - Caution: EPA does not register filters for crypto removal.
Activated carbon
Removes chlorine
Ultraviolet light
Pentiodide resins
Water softener

Filters collect germs from your water, so someone who is not HIV infected should change the filter cartridges for you; if you do it yourself, wear gloves and wash your hands afterwards. Filters may not remove crypto as well as boiling does because even good brands of filters may sometimes have manufacturing flaws that allow small numbers of crypto to get past the filter. Also, poor filter maintenance or failure to replace filter cartridges as recommended by the manufacturer can cause your filter to fail.

Bottled water: If you drink bottled water, read the label and look for this information:

Water labeled as follows was processed by method effective against crypto	Water labeled as follows may not have been processed by method effective against crypto
Reverse osmosis treated	Filtered
Distilled	Micro-filtered
Filtered through an <i>absolute</i> 1 micron or smaller filter	Carbon-filtered
"1 micron absolute"	Particle-filtered
	Multimedia-filtered
	Ozonated
	Ozone-treated
	Ultraviolet light-treated
	Activated carbon-treated
	Carbon dioxide-treated
	Ion exchange-treated
	Deionized
	Purified
	Chlorinated

Bottled water labels reading "well water," "artesian well water," "spring water," or "mineral water" do not guarantee that the water does not contain crypto. However, water that comes from protected well or protected spring water sources is less likely to contain crypto than bottled water or tap water from less protected sources, such as rivers and lakes.

Home distillers: You can remove crypto and other germs from your water with a home distiller. If you use one, you need to carefully store your water as recommended for storing boiled water.

Other drinks: Soft drinks and other beverages may or may not contain crypto. You need to know how they were prepared to know if they might contain crypto.

If you drink prepared drinks, look for drinks prepared to remove crypto:

Crypto killed or removed in preparation	Crypto may not be killed or removed in preparation
Canned or bottled soda, seltzer, and fruit drinks	Fountain drinks
Steaming hot (175° F or hotter) tea or coffee	Fruit drinks you mix with tap water from frozen concentrate
Pasteurized drinks	Iced tea or coffee

Information on Prepared Drinks

Juices made from fresh fruit can also be contaminated with crypto. Several people became ill after drinking apple cider made from apples contaminated with crypto. You may wish to avoid unpasteurized juices or fresh juices if you do not know how they were prepared.

Take extra care when traveling.

If you travel to developing nations, you may be at a greater risk for crypto because of poorer water treatment and food sanitation. Warnings about food, drinks, and swimming are even more important when visiting developing countries. Avoid foods and drinks, in particular raw fruits and vegetables, tap water, or ice made from tap water, unpasteurized milk or dairy products, and items purchased from street vendors. These items may be contaminated with crypto. Steaming-hot foods, fruits you peel yourself, bottled and canned processed drinks, and hot coffee or tea are probably safe. Talk with your health care provider about other guidelines for travel abroad.

For more information on crypto, call the CDC National AIDS Hotline at 1-800-342-AIDS.

This material was prepared by the inter-agency Working Group on Waterborne Cryptosporidiosis, which includes representatives from the Centers for Disease Control and Prevention, Environmental Protection Agency, Food and Drug Administration, U.S. Department of Agriculture, National Association of People With AIDS, AIDS Coalition to Unleash Power, and representatives of state and local health departments and water utilities.

PREVENTING CRYPTOSPORIDIOSIS: A GUIDE FOR THE PUBLIC

What is *Cryptosporidium*?

Cryptosporidium (pronounced krip-toe-spo-rid-ee-um) is a parasite that can live in the intestines of humans, farm animals, wild animals, and household pets. Although there are several species of *Cryptosporidium*, only one species, *Cryptosporidium parvum*, is known to cause infection in humans. The parasite, which is too small to be seen without a microscope, is protected by an outer shell called an oocyst (oh-oh-cist). This protective shell allows it to survive outside the body for long periods of time. When a person or animal swallows *Cryptosporidium* oocysts, the parasite comes out of its shell and can cause infection. More *Cryptosporidium* oocysts are then produced and passed in the feces (bowel movements) of the infected person or animal.

Where is *Cryptosporidium* Found ?

Animal droppings and human feces are the most common sources of *Cryptosporidium*. Therefore, soil, drinking water, recreational water, food, hands, and other surfaces contaminated by such wastes can contain *Cryptosporidium* as well.

How Can *Cryptosporidium* Affect My Health ?

If you swallow *Cryptosporidium* oocysts, 2 to 10 days later you may get a disease called cryptosporidiosis. Symptoms may include diarrhea, which could be watery, stomach cramps, upset stomach, and a slight fever.

If you are healthy and have a normal immune system, your symptoms usually will last for 2 weeks or less, although during that time your condition may improve and then worsen. People who recover from their initial illness may continue to pass *Cryptosporidium* in their feces for up to two months. *During this 2-month period they may spread the disease to others.* Although some people who swallow *Cryptosporidium* will not get sick, they can still pass the organism in their feces.

If you have a severely weakened immune system, you may have cryptosporidiosis for a longer period of time, and it could lead to serious or life-threatening illness. You should talk with your health care provider to learn how to avoid cryptosporidiosis. Examples of people with weakened immune systems include those with HIV/AIDS, cancer and transplant patients taking certain immunosuppressive drugs, and people with inherited diseases that effect the immune system.

How Would I Know if I Have Cryptosporidiosis ?

The only way to tell if you have cryptosporidiosis is to have your feces analyzed in a laboratory. Because most people recover from the infection without visiting a doctor, they may never know if *Cryptosporidium* was the cause of their illness.

Is There a Treatment for Cryptosporidiosis ?

Presently, there is no drug that can cure cryptosporidiosis. Most people with a healthy immune system will recover on their own. Young children and persons with a weakened immune system may need special treatment from a doctor to replace fluids lost during the

illness. If you have diarrhea, you should drink plenty of fluids and may also wish to take over-the-counter anti-diarrheal medication.

How is Cryptosporidiosis Spread ?

You can become infected by swallowing *Cryptosporidium*. Even a small amount may cause infection. Some sources of the disease are:

Feces

- People infected with *Cryptosporidium* can pass the infection to others through soiled diapers, clothing, bedding, or other items. You should always wash your hands after touching items that may be contaminated.
- Infected persons may have small amounts of feces containing *Cryptosporidium* on their skin throughout the genital area, including the thighs and buttocks. Sex that may involve contact with feces, including oral and anal sex, can lead to infection with *Cryptosporidium*.
- The feces of animals, especially animals less than 6 months old or animals with diarrhea, can contain *Cryptosporidium*. You should always wash your hands after touching animals, cleaning up their feces, cleaning their cages or stalls, or visiting barns or other areas where these animals live.

Food

- Food that is grown in or has fallen upon soil contaminated with feces.
- Unpasteurized milk and dairy products that may have been contaminated with feces.
- Food contaminated by being handled by someone who is infected and does not wash their hands carefully, or food that is washed with *Cryptosporidium*-contaminated water.

Water

- Water in lakes, rivers, streams, ocean bays, swimming pools, hot tubs, jacuzzis, and recreational water parks can be contaminated with *Cryptosporidium*. When swimming, if you drink this water or accidentally swallow it, you may get cryptosporidiosis. Neither the chlorine used to disinfect swimming pools nor the types of filters used in most swimming pools can be depended upon to kill or remove *Cryptosporidium*.
- Contaminated drinking water or ice may be a source of *Cryptosporidium* infection. Unlike most germs, *Cryptosporidium* is not completely removed or killed by treatment methods most commonly used to disinfect drinking water.

How Can I Protect Myself ?

1. Always Wash Your Hands Thoroughly with Soap and Hot Water.

- Any time you may have touched human or animal feces. Always wash your hands after using the bathroom, changing diapers, having sex, or handling animals. You can also become infected by touching objects that are contaminated with feces such as faucet handles, diaper changing tables, or bed pans.
- After working in soil. Soil can become contaminated when an animal with cryptosporidiosis leaves its droppings there.
- Before eating.

2. Avoid Sexual Activity that May Involve Contact with Feces.

3. Avoid Contaminated Food.

- Food that will be eaten uncooked should be washed with purified (boiled or filtered) water before serving.
- Do not drink or eat unpasteurized milk, dairy products, or juices and ciders.

4. Know the Source of Your Water.

- Do not drink or swallow water directly from rivers, lakes, streams, the ocean, swimming pools, hot tubs, or jacuzzis.
- If you travel to a less developed region, you may want to avoid drinking water that has not been boiled or filtered to remove *Cryptosporidium*.

5. Extra Precautions for People with Severely Weakened Immune Systems.

If you have a severely weakened immune system, consult your health care provider for additional guidance. You can also call the CDC AIDS Hotline toll-free at 1-800-342-2437 and ask for more information on cryptosporidiosis, or use the WWW site www.cdc.gov/ncidod/diseases/crypto/crypto.htm.

Should I Have My Water at Home Tested for *Cryptosporidium* ?

Home tests for *Cryptosporidium* are generally not recommended because they are expensive and impractical. This is especially true if you are served by a municipal water system that is already providing this service. The test requires a large amount of water (about 100-400 gallons) and many hours of analysis by a specially trained microbiologist. For more information on *Cryptosporidium* testing in your local water system, contact your water provider or the state agency that sets rules for water systems. If you have a private drinking water source, routine maintenance should include annual testing for bacterial contamination. This may provide an indication of possible contamination.

What Should I do if My Water Utility Reports *Cryptosporidium* in My Drinking Water ?

Current water treatment practices may not remove all *Cryptosporidium* from drinking water. Drinking water systems that routinely test for *Cryptosporidium* are likely to find it occasionally. If *Cryptosporidium* is found in your drinking water, public health and water supply officials will look at many measures of water quality and alert the public about any additional precautions that might be necessary. If you are advised to boil your water, don't drink tap water or eat uncooked products prepared with tap water such as food or ice, unless you boil the water for 1 full minute, or filter the water first.

What About Boiling, Home Filters, and Bottled Water ?

Boiling your drinking water for 1 minute is the best way to get rid of *Cryptosporidium*. When boiling is not possible, there are many different types of home water filters and bottled water that you can use, although not all of them can protect you against cryptosporidiosis.

If you are interested in a specific brand of filter and want to find out if it removes *Cryptosporidium* you can contact NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, MI 48113-0140, 1-800-673-8010, or by fax at 1-313-769-0109. NSF International is an independent testing group that some filter manufacturers use to certify their products. In addition, any process that uses reverse osmosis or a filter with a pore size of 1 micron **absolute** or smaller should remove *Cryptosporidium*. Remember that all filters must be properly maintained as recommended by the manufacturer.

If you choose to buy a filter, look for the following information on the label:

Filters Designed to Remove <i>Cryptosporidium</i> (any of the four messages below on a package label indicate that the filter should be able to remove <i>Cryptosporidium</i>)
Reverse osmosis (with or without NSF testing)
Absolute pore size of 1 micron or smaller (with or without NSF testing)
Tested and certified by NSF Standard 53 for cyst removal
Tested and certified by NSF Standard 53 for cyst reduction

All types of bottled water are not equally safe. Bottled water labels that say “well water,” “artesian well water,” “spring water,” or “mineral water,” do *not* guarantee water free of *Cryptosporidium*. If you want to buy bottled water with a low risk of *Cryptosporidium*, read the label and look for the following information:

Water Processed by a Method Effective Against <i>Cryptosporidium</i>
Reverse osmosis treated
Distilled
Filtered through an <i>absolute</i> 1 micron or smaller filter
1 micron <i>absolute</i>

PREVENTING CRYPTOSPORIDIOSIS: A GUIDE TO WATER FILTERS AND BOTTLED WATER

Filtering tap water: Not all available home water filters remove crypto. All filters that have the words “reverse osmosis” on the label protect against crypto. Some other types also work, but not all filters that remove objects 1 micron or larger from water are the same. Look for the words “absolute 1 micron.” Some “1 micron” and most “nominal 1 micron” filters will not work against crypto. To find out if a particular filter removes crypto, contact NSF International (3475 Plymouth Road, P.O. Box 130140, Ann Arbor, MI 48113-0140, 1-800-673-8010, 1-313-769-0109 [fax]), an independent testing group. Ask NSF for a list of “Standard 53 Cyst Filters.” Check the model number on the filter you intend to buy to make sure it is *exactly* the same as the number on the NSF list. Look for the NSF trademark on filters, but be aware that NSF tests filters for many different things. Also look for the words “Standard 53” and the words “cyst reduction” or “cyst removal” for an NSF-tested filter that works against crypto. Because NSF testing is expensive, many filters that may work against crypto have not been tested. Reverse osmosis filters work against crypto whether they have been tested by NSF or not. Many other filters not tested by NSF also work if they have an absolute pore size of 1 micron or smaller.

If you choose to buy a filter, look for this information on the label:

Filters designed to remove crypto (any of the four messages below on a package label indicate that the filter should be able to remove crypto)	Filters labeled only with these words may not be designed to remove crypto
Reverse osmosis (with or without NSF testing)	<i>Nominal</i> pore size of 1 micron or smaller
<i>Absolute</i> pore size of 1 micron or smaller (with or without NSF testing)	One micron filter
Tested and certified by NSF Standard 53 for cyst removal	Effective against <i>Giardia</i>
Tested and certified by NSF Standard 53 for cyst reduction	Effective against parasites
	Carbon filter
	Water purifier
	EPA approved - Caution: EPA does not approve or test filters.
	EPA registered - Caution: EPA does not register filters for crypto removal
	Activated carbon
	Removes chlorine
	Ultraviolet light
	Pentiodide resins
	Water softener

Filters collect germs from water, so someone who is not HIV infected should change the filter cartridges; anyone changing cartridges should wear gloves and wash their hands afterwards. Filters may not remove crypto as well as boiling does because even good brands of filters may sometimes have manufacturing flaws that allow small numbers of crypto to get past the filter. Also, poor filter maintenance or failure to replace filter cartridges as recommended by the manufacturer can cause a filter to fail.

If you drink bottled water, read the label and look for this information:

Water labeled as follows was processed by method effective against crypto	Water labeled as follows may not have been processed by method effective against crypto
Reverse osmosis treated	Filtered
Distilled	Micro-filtered
Filtered through an <i>absolute</i> 1 micron or smaller filter	Carbon-filtered
“1 micron absolute”	Particle-filtered
	Multimedia-filtered
	Ozonated
	Ozone-treated
	Ultraviolet light-treated
	Activated carbon-treated
	Carbon dioxide-treated
	Ion exchange-treated
	Deionized
	Purified
	Chlorinated

Bottled water labels reading “well water,” “artesian well water,” “spring water,” or “mineral water” do not guarantee that the water does not contain crypto. However, water that comes from protected well or protected spring water sources is less likely to contain crypto than bottled water or tap water from less protected sources, such as rivers and lakes.

Home distillers: You can remove crypto and other germs from your water with a home distiller. If you use one you need to carefully store your water as recommended for storing purified water.

Other drinks: Soft drinks and other beverages may or may not contain crypto. You need to know how they were prepared to know if they might contain crypto.

If you consume prepared beverages, look for drinks from which crypto has been removed:

Crypto killed or removed in preparation	Crypto may not be killed or removed in preparation
Canned or bottled soda, seltzer, and fruit drinks	Fountain drinks
Steaming hot (175° F. or hotter) tea or coffee	Fruit drinks you mix with tap water from frozen concentrate
Pasteurized drinks	Iced tea or coffee

Juices made from fresh fruit can also be contaminated with crypto. Several people became ill after drinking apple cider made from apples contaminated with crypto. You may wish to avoid unpasteurized juices or fresh juices if you do not know how they were prepared.

CHAPTER 7

Recreational Water



Chapter 7 - Recreational Water

David G. Addiss, Centers for Disease Control and Prevention

RECREATIONAL WATER

Waterborne cryptosporidiosis associated with recreational water exposure is an emerging public health problem. *Cryptosporidium* oocysts are resistant to disinfection by chlorine at levels generally used in swimming pools, and recreational water filtration units that use sand filter media are not effective in removing oocysts. Furthermore, few recreational water facilities enforce measures that might reduce the potential for contamination. The low infective dose of this organism and the intermittent nature of diarrhea experienced by many persons with cryptosporidiosis adds to the difficulty of preventing swimming-associated cryptosporidiosis.

The first reported U.S. outbreak of cryptosporidiosis associated with recreational water exposure occurred in 1988 in Los Angeles County, Calif. Forty-four (73% of the total) persons from five separate swimming groups reported diarrhea after using the same swimming pool in July and August. Unlike most outbreaks subsequently reported, a fecal accident was noted the week before onset of illness.

Since then, nine additional recreational waterborne outbreaks of cryptosporidiosis have been reported in the United States; these have occurred in California, Kansas, Idaho, Oregon, Wisconsin, New Jersey, and Georgia. Attack rates among pool users have ranged from 15 to 100%; typically, the highest attack rates are reported among children. The number of ill persons per outbreak has ranged from 26 to more than 2,000. Although some outbreaks have occurred in the presence of inadequate chlorination or malfunctioning filter systems, no such irregularities have been identified in other outbreaks.

Outbreaks have occurred in a variety of recreational water settings, including a lake at a state park in New Jersey, a large recreational water park in Georgia, a wave pool in Oregon, a water slide in Idaho, and community or hotel pools in Wisconsin and Kansas. The occurrence of recreational waterborne cryptosporidiosis appears to be increasing, and these outbreaks are most certainly underrecognized and underreported. Outbreaks in Wisconsin and Oregon followed large drinking water-associated outbreaks in nearby cities, suggesting that increased awareness and enhanced surveillance may have played a role in the detection and investigation of these outbreaks.

As noted previously in this handbook, *Cryptosporidium* oocysts are resistant to disinfection by chlorine at levels generally used in swimming pools. Because *Cryptosporidium* oocysts are only 4-6 microns, most recreational water filtration units that use sand filter media are not effective in removing them. In a typical case of diarrhea, one bowel movement can contain enough oocysts to contaminate 100 million gallons of water, to the extent that swallowing a single mouthful of this water can cause illness. Because persons infected with *Cryptosporidium* will excrete oocysts for several weeks after they have stopped having diarrhea, contamination of recreational water is possible long after symptoms are no longer present.

Few recreational water facilities enforce measures that might reduce risk of exposure, such as showering before entering the pool, excluding persons with diarrhea or incontinence, or restricting diaper-age children to certain pools. Children in diapers and those being toilet trained are more apt to have fecal accidents. This, coupled with younger children's tendency to swallow pool water, increases their chance of becoming ill. In addition, younger children are more likely to suffer from dehydration as a result of diarrhea. Restricting access to certain pools can reduce the risk of spreading contamination to an entire recreational facility.

Cryptosporidium oocysts are resistant to disinfection by chlorine at levels generally used in swimming pools, and recreational water filtration units that use sand filter media are not effective in removing oocysts.

Data on effective prevention strategies are extremely limited. Behavioral changes will require education of swimmers and facility management alike. Improved pool filtration, and separate filtration and/or circulation systems for adult and children's pools may reduce risk, but such changes can be costly, and the degree to which they reduce risk is unknown. Development and enforcement of clear and effective policies regarding fecal accidents in recreational water facilities is needed, but the effectiveness of stringent policies is unclear. For example, one recommendation might be to treat all observed fecal accidents as potentially involving *Cryptosporidium*, in which case all swimmers should immediately leave the

pools and the water should be effectively treated for *Cryptosporidium*. Unfortunately, fecal accidents are often not reported and can be difficult to detect when stools are watery.

In light of these uncertainties, much work is needed to educate the public and the recreational water industry, and to evaluate potential intervention strategies. In the meantime, immunosuppressed persons should be counseled regarding the potential risk of *Cryptosporidium* infection associated with recreational water.

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Appendix

Selected Articles

Cryptosporidiosis: Sources of Infection and Guidelines for Prevention*

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Cryptosporidium parvum is an important emerging pathogen in the United States and a cause of severe, life-threatening disease in patients with AIDS. No safe and effective form of specific treatment for cryptosporidiosis has been identified to date. The parasite is transmitted by ingestion of oocysts excreted in the feces of infected humans or animals. The infection can therefore be transmitted from person-to-person, through ingestion of contaminated water (drinking water and water used for recreational purposes) or food, from animal to person, or by contact with fecally contaminated environmental surfaces.

Outbreaks associated with all of these modes of transmission have been documented. Patients with human immunodeficiency virus infection should be made more aware of the many ways that *Cryptosporidium* species are transmitted, and they should be given guidance on how to reduce their risk of exposure. This article summarizes existing data on the various modes of transmission. It includes an in-depth look at waterborne transmission because as more research data are made available to the public, physicians will increasingly be asked by patients about the importance of this source of infection compared with other sources of infection.

Cryptosporidium parvum has been recognized as a human pathogen since 1976. From 1976 to 1982 the disease was rarely reported and primarily occurred in immunocompromised persons. In 1982, the number of reported cases began to increase dramatically as part of the AIDS epidemic. Initially the increase was limited to immunocompromised persons; however, with the aid of newly developed laboratory diagnostic techniques, outbreaks in immunocompetent persons began to be recognized. In immunocompetent persons, cryptosporidiosis is manifested as an acute, self-limiting diarrheal illness lasting 7 to 14 days and it is often accompanied by nausea, abdominal cramps, and low-grade fever. In patients with AIDS, cryptosporidiosis is generally chronic and more severe than in immunocompetent persons; the voluminous watery diarrhea is often debilitating and may be accompanied by severe abdominal cramps, weight loss, anorexia, malaise, and low-grade fever [1].

No safe and effective form of treatment for Cryptosporidiosis has been identified to date. On the basis of initial human treatment trials, several drugs have been reported to decrease the frequency or volume of stool production in some patients. However, to date,

none of these initially “promising” drugs have lived up to expectations when subjected to larger, controlled studies or to widespread use by physicians in clinical practice.

Incidence of Cryptosporidiosis

Cryptosporidiosis is among the most common causes of diarrhea in patients with AIDS in the United States. About 2.2% of all patients whose cases of AIDS are reported to Centers for Disease Control and Prevention (CDC) have cryptosporidiosis as their AIDS-defining illness; 3.5% of children whose cases of AIDS are reported to the CDC have cryptosporidiosis. Hospital-based studies indicate that Cryptosporidiosis is diagnosed in 10%-20% of patients with AIDS who have diarrhea [2-6]. Because diarrhea occurs in about half of all patients with AIDS each year [2, 7], it is estimated that the annual rate of cryptosporidial infection among all patients with AIDS may approach 5%-10%.

Cryptosporidiosis can occur at any time in the course of HIV infection. However, severe and persistent disease correlates well with CD4 counts of less than 180 cells/mm³. In one study, only 5 (13%) of 39 patients infected

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with *C. parvum* and with CD4 counts of less than 180 cells/mm³ had self-limiting disease, whereas all 8 patients with CD4 counts of greater than 180 cells/mm³ had infections that cleared and did not relapse during a follow-up period of 1-24 months [8].

Source of Infection and Risk Factors

Cryptosporidium species are transmitted by ingestion of oocysts excreted in the feces of infected humans or animals. Cryptosporidial infection can therefore be transmitted from person-to-person, through ingestion of fecally contaminated water or food, from animal to person, or by contact with fecally contaminated environmental surfaces.

Transmission via Water and Food

Six well-documented outbreaks of cryptosporidiosis attributed to drinking water have been recognized in the United States, including an outbreak in Milwaukee in 1993 that affected over 400,000 persons [9-15]. The source of drinking water used by utilities in these outbreaks included surface water (lakes, rivers, streams), well water, and spring water. Several outbreaks have also been associated with swimming pools and amusement park wave pools or water slides [12, 16-19].

There is considerable circumstantial evidence that low level (nonepidemic) transmission of *Cryptosporidium* species through drinking water may be occurring throughout the United States. Recent studies indicate that *Cryptosporidium* oocysts are present in 65% - 97% of surface waters (rivers, lakes etc.) tested throughout the country [20-23]. Because *Cryptosporidium* species are highly resistant to chemical disinfectants used in the treatment of drinking water, physical removal of the parasite from contaminated water by filtration is an important component of the water treatment process. However, a filtration system, especially one that is not well maintained and operated, may not afford absolute protection. All waterborne outbreaks of cryptosporidiosis detected to date have occurred in communities where water utilities met state and federal standards for acceptable quality of drinking water, and in all three of the outbreaks that involved surface water supplies, a filtration system had been used. Data from the outbreaks suggest that compliance of utility companies with state and federal standards for water treatment may not be adequate to protect citizens from waterborne cryptosporidiosis. Moreover, recent surveys for the occurrence of *Cryptosporidium* oocysts in fully treated (disinfected and filtered) municipal water demonstrate that small numbers of oocysts were able to breach filters and were present in tap water in 27%-54% of communities evaluated [23, 24].

Twenty-three million Americans reside in communities that do not filter municipal drinking water that comes from surface sources [25]. These communities include some of America's largest cities, which have substantial numbers of patients with HIV infection or AIDS, (e.g. New York, Boston, Seattle, Portland, and San Francisco). Small numbers of *Cryptosporidium* oocysts have also been intermittently found in the drinking water in these cities.

However, none of the cities with filtered water or with unfiltered drinking water where small numbers of oocysts have been detected have had a recognizable outbreak of cryptosporidiosis. While low level transmission could be occurring as a result of such low concentrations of oocysts, there are no data to date that document such an event. The absence of a treatment barrier for *Cryptosporidium* species in communities that do not use a filtration system could result in significant transmission if the source of the drinking water were to become heavily contaminated with this organism.

The health risk (especially for immunocompromised persons) associated with consumption of (filtered or unfiltered) public drinking water contaminated with small numbers of *C. parvum* oocysts is unknown. Although researchers are able to recover small numbers of oocysts from treated drinking water, current laboratory methods do not enable them to determine if these oocysts are viable or infectious. Moreover, it is not known if the number of oocysts present in drinking water constitutes a sufficient dose to cause illness in humans, whether immunosuppressed persons are more susceptible to lower doses of oocysts than are immunocompetent persons, or if there are strains of *C. parvum* that vary in infectious dose and virulence. Dose response data are currently available for only one isolate of *C. parvum* that was evaluated in healthy volunteers. In this study the 50% infectious dose (ID₅₀) was estimated to be 132 oocysts. [26, 26a].

Food contaminated with feces from infected persons or animals has always been considered to be a theoretical risk factor for cryptosporidiosis. A recent outbreak of cryptosporidiosis in children who drank fresh-pressed apple cider contaminated by animal feces at a county fair in Maine provides the first documentation of this mode of transmission [27]. Although oocysts do not survive cooking, infected food handlers may unwittingly transmit the infection by fecal contamination of beverages, green salads, or other foods that are not cooked or heated after handling.

Animal-to-Person Transmission

C. parvum is capable of infecting all species of mammals including humans [28, 29]. In animals, cryptosporidiosis almost exclusively occurs in newborns. There are no data on the national prevalence of cryptosporidial

infection in puppies or kittens in the United States, but in a study in Atlanta, 10% of puppies examined at an animal shelter were found infected and shedding oocysts [30]. To date there have been no confirmed instances of *C. parvum* transmission from infected household pets. Two suspicious episodes have been reported in which an infected cat was found in the house of an immunodeficient person with cryptosporidiosis; in neither instance could the direction of spread be clearly elucidated [31, 32].

Other species of *Cryptosporidium* that infect birds (*C. meleagridis* and *C. baileyi*), rodents (*C. muris*), reptiles (*C. serpentis*), and fish (*C. nasorum*) are not generally considered to be infectious for humans [33]. To date, only one case of human infection with any of these species has been reported [34]; this case occurred in an HIV-infected patient from whom a parasite resembling *C. baileyi* was isolated, but who did not have a pet bird or other specific exposures to birds.

In strong contrast to the weak epidemiological data implicating household pets as sources of cryptosporidiosis in humans, the evidence for *C. parvum* transmission from calves to humans is unequivocal [35-40]. It is estimated that 50% of dairy calves shed oocysts and that the parasite is present on more than 90% of dairy farms [41-43]. While relatively few patients with AIDS are directly exposed to calves or to premises where calves are raised, the high prevalence of infected calves, especially on dairy farms, raises additional questions about the prudence of drinking unpasteurized milk.

Person-to-Person Transmission

Person-to-person spread of *C. parvum* is believed to be one of the most common modes of transmission. Children still wearing diapers who attend day care centers are at especially high risk for this form of transmission either through intimate play or because of careless diaper changing practices. Infections acquired by children in the day care setting are often transmitted to care-givers at the facility and to older children and adults who come in contact with the infected child at home [44]. Any sexual practice that brings a person into oral contact with the feces of an infected person is also considered a high-risk for exposure to *Cryptosporidium* species. It is not known how many patients with HIV infection or AIDS acquire cryptosporidiosis by this route of transmission. For patients with HIV infection or AIDS who follow “safer sex” practices, including avoidance of feces, this mode of transmission should be minimal.

Several other types of high-risk exposures include direct contact with feces while caring for an infected person (e.g. bathing, changing soiled bedding, or emptying a bed pan) at home or in a medical facility. Nosocomial infections involving both medical care staff and patients

have been reported [45- 50]. Hospital staff should observe proper precautions for preventing fecally transmitted disease while caring for patients with cryptosporidiosis.

Prevention of Exposure

The proportion of cases of cryptosporidiosis in HIV-infected persons that can be attributed to each mode of transmission is unknown. Identification of the most common route(s) of transmission and a better understanding of the specific risk factors for exposure that lead to infection would greatly facilitate development of a more targeted prevention strategy. Until such data become available, doing what one can to avoid each of the commonly recognized modes of transmission should reduce the risk of infection. As with many other opportunistic infections for which effective treatment is not available, prevention of infection is the most effective approach to disease control.

It is clear that HIV-infected persons should not drink water directly from lakes or rivers. This includes accidental ingestion of lake or river water while swimming or engaging in other types of recreational water activity. The amount of chlorine and types of filters used in public swimming pools are not adequate to prevent transmission from swimmers infected with *Cryptosporidium* species who can shed oocysts for weeks after symptoms resolve. Patients should be advised that these activities may expose them to *Cryptosporidium* species, especially if the pool is used by young children who might accidentally defecate in the pool.

Because HIV-infected patients who have a cryptosporidial infection can reinfect themselves and infect others, they should not use swimming pools that will be used by others. Swimming pools can be disinfected by using high concentrations of chlorine for long periods (e.g. 3 mg/l water for 53 hours or 8 mg/l for 20 hours). While several municipal waterborne outbreaks of cryptosporidiosis have occurred in the U.S., the magnitude of risk for acquiring cryptosporidiosis by drinking municipally treated water in the non-outbreak setting is presently unknown. The risk is likely to vary from city to city depending on the quality of the city’s source of water and the quality of water treatment provided. Current risk data are not adequate to recommend that all immunocompromised persons in the U.S. boil or avoid drinking tap water. However, persons with severely weakened immune systems should be advised that the risk is not zero. Until the health risk associated with small numbers of oocysts commonly found in drinking water is more clearly defined, HIV-infected persons who want to take independent precautions to reduce the risk of waterborne cryptosporidiosis can do so by boiling for 1 minute all water intended for drinking [51, 51a].

As an alternative to boiling water, certain types of individual or household filters or a high-quality bottled water may provide nearly the same level of protection. While several portable and household filters are capable of removing *Cryptosporidium* oocysts from drinking water, bacterial overgrowth on these filters may pose an additional health risk [52]. Therefore, patients should be advised to carefully follow the manufacturer's instructions for the use and replacement of filters. In addition, since *Cryptosporidium* oocysts are likely to concentrate on the outside of a filter cartridge that has been in use, patients should have someone else change dirty cartridges or they should use gloves if they do it themselves.

When selecting an effective filter one must pay careful attention to label information in order to avoid purchasing one of numerous filters on the market that are not effective against *Cryptosporidium* species. Only microstraining filters that can remove particles 0.1 to 1 micron in size should be considered. Filters in this category that provide the greatest assurance of removal of *Cryptosporidium* species include those that filter water by reverse osmosis, those that have "absolute" 1 micron filters, and those that meet NSF standard #53 for "cyst removal." The "nominal" 1 micron filter rating is not standardized and many filters in this category may not be capable of removing greater than 99% of oocysts. Filters that only employ ultra-violet light, activated carbon, or pentiodide impregnated resins are not effective against *Cryptosporidium* species. It should not be assumed that all filters advertised as effective against *Giardia* species are effective against *Cryptosporidium* species.

Many, but not all, brands of bottled water may provide a reasonable alternative to tap water. Patients should be advised that the origin, the microbial quality, and microbial treatment of water before it is bottled vary considerably among companies and even among brands of water produced by the same company. Information on the labels of water bottles has not been standardized and often does not provide the consumer with the type of information needed to identify the product with the lowest risk for cryptosporidiosis. As with filters, individuals who want to use bottled water as an alternative to tap water must research and pick their supplier very carefully. In general, bottled water derived from springs or wells is safer than water obtained from rivers and lakes. Bottled water that originates from well-protected underground sources (a well or a spring), that are not subject to intermittent contamination from surface water, and that have been consistently shown to be free of coliform bacteria will not contain oocysts. Since there is no industry labeling standard that reflects this information, patients may have to question vendors directly to obtain information about these points.

Just as in the case of municipal water supplies, the absence of coliform bacteria in the final bottled water product does not provide assurance that the water came from an uncontaminated source or that it has been treated adequately to remove *Cryptosporidium* species. Treatment of water prior to bottling by distillation or reverse osmosis filtration, regardless of the source (well, spring, river, lake), ensures the remove of oocysts if they are present. In addition, water that has been passaged through an "absolute" 1 micron or smaller filter, or through a filter labeled as meeting NSF standard #53 for "cyst removal" prior to bottling will provide nearly the same level of protection. Bottlers using "nominal" 1 micron filters as the only treatment barrier for *Cryptosporidium* species may not be capable of removing >99% of oocysts. Companies that use the word "micro-filtration" on the label may or may not be using filters that are effective against *Cryptosporidium* species.

Although ozonation of water has also been shown to kill *Cryptosporidium* oocysts, the appropriate amounts of ozone needed to disinfect water at various temperatures and pHs have not been clearly defined. Bottlers are currently restricted to no more than 0.4 mg of ozone per liter in the final product. This may or may not be an adequate amount to kill *Cryptosporidium* species, depending on the contact time and other water conditions. In general, the amount of ozone needed to kill *Cryptosporidium* species is hundreds of times greater than that needed to kill bacterial contaminants [33]. Treatment of municipal tap water with charcoal to remove the chlorine taste or with short-term exposure to ultra-violet light before bottling offers no additional protection against *Cryptosporidium* species.

The risk of cryptosporidiosis associated with pet ownership is probably small, but it is reasonable to suggest that HIV-infected persons avoid contact with feces of animals. In situations where it is not possible to avoid such contact, e.g., cleaning a cat litter box or removing feces from shoes or other items that may have become contaminated, patients should be instructed to wear disposable gloves. The risk from household pets (dogs and cats) is greatest from exposure to animals younger than 6 months of age and to any animal with diarrhea. Physicians should inform patients that pet ownership may entail a small risk for cryptosporidial infection and should discuss how these risks can be further minimized; it should not be recommended that patients destroy or give away healthy pets with whom they have a strong emotional attachment. Immunosuppressed patients contemplating the acquisition of a new pet should avoid bringing any animal with diarrhea into their household, should avoid purchasing a dog or cat younger than 6 months of age, and should not adopt stray animals found roaming the neighborhood. HIV-infected patients who

want to assume the small risk of acquiring a puppy or kitten younger than 6 months of age should be advised to specifically request that their veterinarian examine the animal's stool for *Cryptosporidium* species before the patient has contact with the animal.

Research Priorities

More rapid and sensitive serological and molecular diagnostic techniques for the detection of cryptosporidia in humans and in environmental sources are needed to facilitate epidemiologic studies of cryptosporidiosis. High priority studies include: 1) an assessment of the proportion of cryptosporidial infections attributable to the low numbers of oocysts frequently found in municipal drinking water and 2) the relative risk of acquiring cryptosporidiosis from drinking water versus contact with animals, unsafe sexual practices, and non-sexual household or hospital contacts. Data from such studies would serve to focus the immunocompromised patient's attention on avoidance of the exposures that would put them at greatest risk. Studies are needed to define the asymptomatic carrier rate for *Cryptosporidium* species in HIV-infected patients who recover from a clinical episode of cryptosporidiosis and who have CD4 cell counts of greater than 200/mm³. There is also a need to know if such carriers are likely to develop severe cryptosporidiosis when their CD4 count drops below 200 cells/mm³. Improved laboratory methods are needed to facilitate screening of potential therapeutic agents for infections due to *Cryptosporidium* species. Finally, state and national reporting systems for cases of cryptosporidial infection are needed to better quantify the public health impact of this disease and to identify outbreaks.

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Giardia and *Cryptosporidium* in raw and finished drinking water*

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The American Water System has conducted extensive monitoring of its operations since 1988. Analysis of 347 surface water samples collected between 1988 and 1993 showed that the prevalence rate of *Giardia* and *Cryptosporidium* was 53.9 percent and 60.2 percent, respectively. But because the parasite assay does not indicate viability or virulence, these results do not necessarily indicate that these water systems were at risk from waterborne pathogens. To supplement coagulation and filtration, the average system will have to apply sufficient disinfection to reduce viable *Giardia* levels by $3.1 \log_{10}$. An analysis of existing disinfection practices shows that most systems are already applying disinfectant at a level sufficient to reduce *Giardia* levels. However, the proposed Disinfectants/Disinfection By-product (D/DBP) Rule may hamper the ability of water utilities to apply sufficient disinfection under current operating conditions. Careful integration of the D/DBP and the Enhanced Surface Water Treatment rule is encouraged.

The analogy of the water purveyor as a juggler of sometimes conflicting federal and state regulations has never been more true. The challenge is to keep all of the regulated parameters successfully flying through the air while new regulations are constantly being added. What makes this prestidigitation even more impressive is that pending regulations, which will have enormous impact, are constantly changing shape during the performance. In the middle of this magic show the ring master attempts to interpret the meaning of the performance and its impact on the audience. This article will try to play the role of the ring master in attempting to discuss the application and interpretation of *Giardia* and *Cryptosporidium* monitoring results but the reader should be aware that this description is based on the proposed regulations, and the final program may be subject to change.

The Information Collection Requirements (ICR) will be an administrative order that will require utilities to monitor and provide the United States Environmental Protection Agency (USEPA) with information that will assist the agency in establishing new regulations (1). Systems will have to provide a variety of technical, chemical, and operational data. For microbiological testing, systems serving populations between 10,000 and 100,000 people will be required to monitor for *Giardia*, *Cryptosporidium*, and total and fecal coliforms (or *Escherichia coli*) in raw water samples. Large systems (those serving >100,000 people) will additionally monitor for coliphage and *Clostridium* spp. in raw water and be required to examine filtered water if raw water values exceed 1/L.

Through the process of regulatory negotiations the USEPA has developed a two-tiered Disinfectants/Disinfection By-Product (D/DBP) Rule (2). Stage 1 regulations will specify maximum contaminant levels (MCLs) and MCL Goals (MCLG) for DBPs; maximum

residual disinfectant levels (MRDLs) and MDRL Goals (MRDLG) for disinfectants; best available technology for achieving compliance with the MCLs; a treatment technique for DBP precursor removal; analytical and monitoring requirements, and reporting and record-keeping requirements. Under stage 1, the MCL for five haloacetic acids and total trihalomethanes will be 60 and 80 g/L, respectively. Stage 2 requirements will be developed using data generated under the ICR (1). In addition, the D/DBP Rule will specify that all public water systems using chlorine disinfection and conventional treatment must operate with enhanced coagulation for removal of DBP precursors if the total organic carbon (TOC) concentration prior to the first application of continuous disinfection exceeds 2.0 mg/L. Enhanced coagulation is defined as achieving a specified percent removal of TOC between the raw water and the point prior to continuous disinfection. The specified removals are based upon source water alkalinity and TOC concentrations. Credit for chlorine disinfection will not be given until the appropriate TOC removal levels have been achieved.

With the development of the D/DBP Rule, USEPA recognized the possibility that in an effort to reduce DBP levels, utilities could inadvertently increase the risk from microbial agents. Utilizing the DBP regulatory analysis model (DBPRAM), USEPA was able to examine the health and economic implications of various approaches to DBP regulation. In a direct comparison of microbial risk from *Giardia* infection with cancer risk for several DBP control scenarios, the predicted increases in *Giardia* infection were orders of magnitude higher than decreases in cancer rates. To ensure that implementation of the D/DBP Rule did not increase microbial risk, USEPA considered it necessary to review the adequacy of the existing Surface Water Treatment Rule (SWTR). This revised rule, which may also include regulation of *Cryptosporidium*, is called the Enhanced SWTR (ESWTR) (3).

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USEPA intends to use the microbial data generated by the ICR to help formulate the final draft of the ESWTR and it is very likely that the final rule will be subject to many modifications. The four principal treatment options outlined in the draft ESWTR are summarized in Table 1.

AWS began *Giardia*, *Cryptosporidium* testing in 1984

The American Water System (AWS) first began to test for *Giardia* in 1984 at several locations of its Pennsylvania operations. Analysts were trained by Dr. Charles Hibler of Colorado State University to perform the zinc sulfate/Lugol's iodine test. Nearly 60 percent of 49 river samples and 36 percent of 79 reservoir samples were positive for *Giardia* cysts. In 1987 the commercial availability of monoclonal antibodies to *Giardia* and *Cryptosporidium* allowed the development of an immunofluorescence method for simultaneous detection of cysts and oocysts in water (4). Comparison of the immunofluorescence antibody (IFA) method with the zinc sulfate (light microscopy) technique showed that the IFA method detected approximately 12 times more *Giardia* cysts in water than did the zinc sulfate technique (5). IFA also allowed for the simultaneous detection of *Cryptosporidium* oocysts.

With the development of the IFA method, a survey was conducted to determine the level of *Giardia* and *Cryptosporidium* in surface water supplies. A total of 66 surface water treatment plants in 14 states and 1 Canadian province were examined (6). The results showed that cysts and oocysts were widely distributed in the aquatic environment. *Giardia* were detected in 81 percent of the raw water samples, and *Cryptosporidium* were found in 87 percent. Either *Giardia*, *Cryptosporidium*, or both, were detected in 98 percent of the raw water samples. Significant correlations were found between *Giardia* and *Cryptosporidium* densities and raw water quality parameters such as turbidity, and total and fecal coliform levels. Higher cyst and oocyst densities were associated with source waters receiving industrial or sewage effluents. The geometric mean for *Giardia* in raw water was 2.8 cysts/L (range=0.04-66 cysts/L), whereas the geometric mean for

Cryptosporidium was 2.7 oocysts/L (range=0.07-484 oocysts/L). Application of a model predicting the 10⁻⁴ annual risk of *Giardia* infection to these raw water data indicated that the average treatment plant would have to provide 5.0 log₁₀ removal, inactivation or both.

Examination of filtered drinking water showed that *Giardia* were detected in 17 percent of the 83 water samples (7). *Cryptosporidium* oocysts were observed in 27 percent of the drinking water samples. Overall, cysts or oocysts were found in 39 percent of the treated effluent samples. Despite the frequent detection of parasites in drinking water, microscopic observations of the cysts and oocysts suggested that nearly all the organisms were nonviable and there were no reported outbreaks of water-related illness in any of the systems examined.

Compliance with the filtration criteria outlined by the Surface Water Treatment Rule (SWTR) did not ensure that treated water was free of cysts or oocysts. The average plant effluent turbidity for sites that were parasite positive was 0.19 ntu. Seventy-eight percent of the sites that were positive for *Giardia* and *Cryptosporidium* met the 0.5-ntu turbidity requirement of the SWTR. No correlation could be found between a particular treatment process, coagulation scheme, or operational practice and the occurrence of cysts or oocysts in filtered effluents. Plants with high source water parasite levels had a high probability of detection

Table 1	
Summary of the Proposed Enhanced Surface Water Treatment Rule	
Parameter	Action
Definitions: Groundwater under the direct influence of surface water	Includes <i>Cryptosporidium</i>
MCLG <i>Cryptosporidium</i>	MCLG = 0
Criteria to Avoid Filtration: Watershed control program for <i>Giardia</i> , <i>Cryptosporidium</i> and viruses.	Tightens requirements to avoid filtration
Analytical & Monitoring Sanitary Survey	All public water systems Frequency: 3-5 years Conducted by State, agent, or system
Treatment Requirements Treatment based on <i>Giardia</i>	3-6 log treatment requirement based on raw water levels
Treatment based on <i>Cryptosporidium</i>	3-6 log treatment requirement based on raw water levels
Minimum treatment	Specifies minimum treatment of 2-log removal of <i>Cryptosporidium</i> in addition to existing SWTR requirements for <i>Giardia</i> and viruses.
No change	Does not modify existing SWTR levels for removal-inactivation

of cysts or oocysts in treated effluents. Examination of disinfection practices showed that nearly all systems applied more than the minimum 0.5 log₁₀ disinfection level specified by the SWTR. More than 75 percent of the systems applied sufficient disinfection to reduce the annual risk of *Giardia* infection to <10⁻⁴.

Detailed analysis of five systems showed variation in the performance of individual filters within a treatment plant for *Giardia* and *Cryptosporidium* removal (8,9). Although the turbidity of the combined filter effluent was low (<0.5 NTU), variation in particle counts between individual filters could exceed 1,000 fold. Significant correlations were shown between the removal of turbidity or particle counts and the reduction in cyst and oocyst levels (9). Particle counts >5 m were shown to be a sensitive indicator of filter performance. Small changes in effluent turbidity could be associated with dramatic increases in particle count levels. Although higher cyst and oocyst levels were associated with the filter ripening period, organisms were also observed in the filter effluents of “mid-run” samples.

Database allows evaluation of regs, issues

The current study was conducted to develop a database of *Giardia* and *Cryptosporidium* results to determine treatment plant performance goals, aid in long-term planning for treatment modifications, and help in determining the impact of future regulations. The project analyzed cyst and oocyst levels from raw and plant effluent water for 72 surface water treatment plants. Analysis using risk assessment techniques developed for *Giardia* and *Cryptosporidium* permitted a theoretical evaluation of the health impact of the data.

Because this database is the most comprehensive collection of results for *Giardia* and *Cryptosporidium* available to the water industry, it was of interest to evaluate the pending regulations and determine the feasibility of balancing the reduced DBP requirements

with the enhanced treatment levels. This analysis also permits evaluation of issues related to interpretation of data collected by the ICR.

Samples collected from 72 plants

Samples were collected from 72 surface water treatment plants located in 15 states and 2 Canadian provinces. Sixty-seven surface water locations were examined. Raw water samples were typically collected from pressurized taps at the intake to the treatment process. Samples were filtered through 10-in. (25.4 cm) wound polypropylene cartridge filters having a nominal porosity of 1 m (Cat. #U1A10U, Memtek Corp., Timonium, MD). Flow rates averaged 0.99 gpm (gallons per minute) and ranged from 0.04 to 4.1 gpm. The total volume collected averaged 132 gal (499 L) and ranged from 22.9 (86.6 L) to 898 gal (3,394 L).

Separate sampling systems were used to collect plant effluent water. Chlorine residuals were neutralized prior to filtration through injection of a sodium thiosulfate solution using an in-line injector (Dema Engineering Co., St. Louis, MO). Flow rates averaged 0.99 gpm and ranged from 0.13 to 2.45 gpm. The total volume collected averaged 1,022 gal (3,863 L) and ranged from 100 (378 L) to 2,080 gal (7,862 L).

After collection, the filter along with the filter housing water was placed in a bag (Whirl-Pac, Nasco, Fort Atkison, WI) containing 10 mL of 37 percent formalin. Filters were double-bagged and shipped to the laboratory via overnight delivery. After delivery, the samples were stored at 2-5°C and usually processed within 24 to 72 hours.

IFA used to detect pathogens

The procedure for detection of *Giardia* and *Cryptosporidium* in water samples has been described (4,8). This method is essentially the same as the American Society for Testing and Materials procedure P229, (10) with minor modifications. For example, a single step centrifugation procedure was used to concentrate the filter extract because it has been shown that *Cryptosporidium* can be lost through repeated centrifugation (11). Neither Evan’s blue nor bovine serum albumin was used because the authors’ experience shows that these procedures did not enhance cyst or oocyst detection.

The recovery efficiency of the procedure was evaluated by spiking 40 gal (151 L) samples with known concentrations of cysts and oocysts. To simulate raw water samples, filter concentrates were added to tap water to achieve a 150 NTU solution.

Table 2	
Summary of Observable Internal Structure for <i>Giardia</i> Cysts	
Observed Structure*	Number of Cysts
Nuclei, median bodies, axoneme	24
Nuclei, median bodies	12
Nuclei, axoneme	12
Median bodies, axoneme	2
*Two or more observed internal structures is considered characteristic of <i>Giardia</i> cysts.	

Densities of cysts and oocysts were reported as the number per liter for surface water and number per 100 L for plant effluent water. When parasites were not detected, the parasite level was reported as less than the detection limit. Unless stated differently, total cyst and oocyst counts are given, and values are not adjusted to reflect recovery efficiencies.

Data were combined with a previous data set

The data from the two-year biannual monitoring (from March 1991 to January 1993) was combined with a previous dataset (October 1988 to June 1990) collected from most of the same systems (6,7). Therefore, five or more analyses were performed on both raw and plant effluent samples for most systems (94 percent).

Physical and operational data were collected

Data characteristic of each site collected from each plant included source type, level of watershed protection, total and fecal coliform counts, heterotrophic plate counts, and turbidity levels for the day of sampling as well as the average level for the previous month. Physical factors included temperature, pH, ammonia, nitrate, phosphate, and total dissolved solids (TDS). Operational data included peak turbidity level, treatment characterization, type of filter media, average filter run time, surface wash, filter-to-waste capability, coagulant type and dosage, polymer type and dosage, pre- and postoxidant levels, and contact times.

Estimates of the level of *Giardia* disinfection were obtained by determining the average pH (7.5), temperature (15°C) and free chlorine residual (1.4 mg/L) for the data set analyzed. Previously published tables (12) indicate 1.0 log₁₀ *Giardia* inactivation will require 31 mg.min/L under these conditions. No *Giardia* disinfection credit was given for treatment with chloramines. Because most systems had not performed tracer studies at the time data were collected, theoretical detention times were adjusted (by a factor of 0.6 for sedimentation basins, and 0.1 for clearwells) to account for short circuiting. The adjusted detention times were divided by 31 to estimate the level of log-fold *Giardia* reduction by free chlorine disinfection. This level of inactivation will change seasonally and under different operating conditions, but for the purposes of this study it provided an estimate of treatment efficacy.

To calculate the level of treatment needed to achieve a theoretical 10⁻⁴ annual risk goal, the logarithmic difference between source water data collected from this study was compared to previously published risk assessment values for *Giardia* and *Cryptosporidium* (13,14). The theoretical 10⁻⁴ annual risk level is 7 x 10⁻⁶ cysts/L for *Giardia* and 3x10⁻⁵ oocysts/L for *Cryptosporidium*, and include an assumption of 2 L per person per day consumption of drinking water. For these calculations, the

authors followed USEPA's procedure of assuming that the method recovery efficiency equaled the level of source water cyst and oocyst viability so that these two variables cancelled each other in the risk calculations. Although there are no data to support this assumption, the authors believe that the calculation results in a conservative measure of risk (e.g. that recovery efficiencies are higher than protozoa viability).

Recovery efficiencies evaluated

During the past five years a large set of recovery efficiency data has been accumulated for the IFA test. Although minor details of the methodology have changed (e.g., a stomacher homogenizer is used instead of hand washing the filters), however, these alterations did not substantially change recovery efficiencies. For tap water samples (turbidity <1 NTU), the geometric mean for recovery of *Giardia* cysts was 42.4 percent (range=18.2 - 118.3 percent; n=58) and the geometric mean for recovery of *Cryptosporidium* oocysts was 23.6 percent (range=8.7 - 74.7 percent; n=57). More than 90 percent of the variation in *Cryptosporidium* recovery efficiencies were within a factor of 2 from the mean, whereas 89 percent of the variation in *Giardia* recovery efficiencies were within a factor of 2 from the mean. It is possible that if the identical method had been used for all the recovery experiments the variation may have been less, but other studies have concluded that there are still unidentified sources of variation within the procedure (11). Although there has been considerable concern related to the reproducibility of monitoring results from various laboratories (15), this study shows that values from one lab can vary by logarithmic factor of 0.31. This variation does not unduly affect the interpretation of treatment goals for surface water plants.

To simulate raw water samples, sample concentrates were added to tap water to achieve a 150 ntu solution. The geometric mean for recovery of *Giardia* cysts from the high turbidity solution was 50.1 percent (range=36.7 - 75.3 percent; n=5) and the geometric mean for recovery of *Cryptosporidium* oocysts was 40.9 percent (range=34.5 - 59.3 percent; n=6). These values are not statistically different from the low turbidity experiments and may illustrate the beneficial impacts of turbidity on sample concentration (11).

When parasites were not detected, the parasite level was reported as less than the detection limit. The geometric mean of the detection limit was 0.99 organisms/L (range=0.004 - 42 cysts/L) for raw water, and 1.79 organisms/100 L (range=0.02 - 52 organisms/100 L) for plant effluent water. The relatively high detection limit is probably due to the nature of the Midwestern waters examined and the fact that emphasis was not placed on achieving absolutely the highest sensitivity possible (e.g. multiple membranes were not processed for samples with

high limits of detection). Despite this approach, cysts or oocysts were detected in a majority of samples. However, the proposed ICR would require water utilities to sample filtered drinking water whenever the limit of detection for source water samples exceeds 1 organism/L. More than 90 percent of the systems examined would have exceeded this level at one time or another. The impact of this low threshold level would be to nearly double the testing requirements for large systems and to stress limited laboratory capabilities. Additionally, the presence of high levels of cysts or oocysts in the raw water did not automatically indicate that the organisms would be found in filtered supplies. A total of 9.4 percent of the plant effluent samples were positive for cysts or oocysts when the raw water detection levels were <1 organism/L compared to an 8.8 percent positive plant effluent rate for raw waters with detection levels >1 organism/L.

Raw water results compiled

Giardia cysts were detected in 118 (45.0 percent) of the 262 raw water samples collected between March 1991 and January 1993. The geometric mean of (detectable) *Giardia* was 2.0 cysts/L with levels ranging from 0.02 to 43.8 cysts/L. Microscopic examination of 343 cysts detected in the raw water samples showed that 50 (14.6 percent) of the organisms had two or more observable internal structures (e.g., axoneme, median bodies, nuclei). Frequently, when the cysts were observed to contain internal structures, all three characteristic structures (axoneme, median bodies and nuclei) were present (Table 2). *Giardia* cysts averaged 8.6 μ m in width (range 6.6 - 11.9 μ m) and 12.3 μ m in length (range 8.6 - 16.5 μ m).

Cryptosporidium were detected in 135 (51.5 percent) of the 262 raw water samples collected between March 1991 and January 1993. The geometric mean of (detectable) *Cryptosporidium* was 2.4 oocysts/L with levels ranging from 0.065 to 65.1 oocysts/L. Microscopic examination of 364 oocysts detected in the raw water samples showed that 124 (34.2 percent) of the organisms had no observable internal structures (e.g. sporozoite or residuum). Nearly 54 percent (183 oocysts) of the isolates contained observable sporozoite (40 additional isolates were labeled “full,” but sporozoite could not be distinguished). A total of 183 samples (69.8 percent) was positive for either *Giardia* (47), *Cryptosporidium* (65), or both (71).

The occurrence of *Giardia* and *Cryptosporidium* for surface water in this study was lower than the rates previously reported for the same sites (6). Earlier the authors reported that *Giardia* cysts were found in 81 percent of the samples tested, and *Cryptosporidium* in 87 percent. This discrepancy suggests four possible explanations:

- The original study counted organisms that were not *Giardia* or *Cryptosporidium*.
- The current study was less efficient in detecting *Giardia* and *Cryptosporidium*.
- Occurrence levels fluctuate as a result of unknown causes. The “true” level of occurrence is the average of the two studies.
- *Giardia* and *Cryptosporidium* levels in raw water have declined over the past four years.

The first possibility—that the previous study detected organisms other than *Giardia* and *Cryptosporidium*—can be discounted because the characteristics of the organisms (the number of internal structures observed in cysts and oocysts) were similar between the two studies. In the previous study, 12.8 percent of the cysts contained two or more structures, compared with 14.6 percent in this study. Oocysts with sporozoite comprised 32 percent of 242 isolates in the previous study compared with 54 percent in this study.

The second possibility is also dismissed because neither the methodology nor the recovery efficiencies have changed substantially. The recovery efficiency in the first study for *Cryptosporidium* was 25.3 percent ($n=16$) compared to 23.6 percent ($n=57$) for this study. Although *Giardia* recoveries in the first study averaged 68.6 percent ($n=16$), some of the values were unrealistically high (i.e., $>100\%$). When these high values were eliminated from the recovery calculation from the first study, the value averaged 44.4 percent, which is similar to the 42.4 recovery ($n=58$) reported for this study.

When the data from this study ($n=262$) are combined with the previous investigation (6,7) ($n=85$), the occurrence of *Giardia* and *Cryptosporidium* in 347 samples was 53.9 percent and 60.2 percent, respectively. These values are consistent with the findings of other investigators (16-21). Ongerth (16) reported detecting *Giardia* cysts in 43 percent of 222 samples collected from 17 sampling stations on three Pacific Northwest rivers. Rose et al (21) recovered *Cryptosporidium* oocysts in 51.4 percent of 111 surface water samples collected in 13 states.

Poulton et al (17) reported that *Cryptosporidium* levels have declined in three of four watersheds monitored by the Thames Water Company in the United Kingdom. Levels decreased over a three year period (1989-1991) with the geometric mean for oocyst levels declining an average 78 percent. Peak levels in oocyst occurrence declined 10- to 20-fold. One watershed, however, showed a 73 percent increase in the geometric mean for oocysts, and a four fold increase in peak concentrations. Combined data from this and the previous study also showed a decline in the occurrence of *Giardia* and *Cryptosporidium* from 1989 to 1992 (Table 3). When the

Table 3

Frequency of Occurrence for *Giardia* and *Cryptosporidium*—1988 - 1992*

Year	Number of Samples	<i>Giardia</i>		<i>Cryptosporidium</i>	
		Number Positive	Percent Positive	Number Positive	Percent Positive
1989	47	38	80.9	42	89.4
1990	38	31	81.6	32	84.2
1991	110	56	50.9	69	62.7
1992	133	55	41.4	60	45.1

*1989 and 1990 data from LeChevallier et al (6).

occasions, while 86.6 percent of the sites were multiple-positive for *Cryptosporidium*. Only one site (a protected watershed in Connecticut) was consistently negative for both *Giardia* and *Cryptosporidium* (n=5). It is highly likely, therefore, that if a utility performs a sufficient number of samples, *Giardia*, *Cryptosporidium* or both will eventually be detected.

The large number of systems with multiple-positive samples shows that the results of the initial survey (6) could be duplicated in subsequent

Table 4

Frequency Distribution of *Giardia* and *Cryptosporidium* in Raw Water

Detection Frequency (percent)	Percent Distribution of	
	<i>Giardia</i>	<i>Cryptosporidium</i>
0	9.1	3.0
1 - 21	10.6	6.1
21 - 40	24.2	27.7
41 - 60	27.3	27.3
61 - 80	16.7	27.3
81 - 100	12.1	13.6

1991-92 data are tabulated by quarters a generalized trend towards lower frequencies of detection is shown throughout this time period. Although it is unclear whether this trend is due to the sampling frequency or some methodological difference, it is possible that there are cyclic variations in environmental cyst and oocyst concentrations. Such multiyear variations are well known for many pathogens (e.g., *Vibrio cholerae*, influenza, etc.) (18). This cyclic phenomena should be considered in the development and interpretation of sampling programs such as that proposed in the ICR. It is possible that intense sampling over a short time span may result in an inaccurate estimation of cyst or oocyst occurrence. Rather, systems should strive to develop a database of cyst and oocyst occurrence over a prolonged period of time.

Analysis of the data according to the raw water sites provides another means to evaluate the accuracy and reliability of the results. This analysis showed that for the 67 raw water sites (serving 72 treatment plants) examined, only five were consistently negative for *Giardia*, and only two were negative for *Cryptosporidium*. All negative sites were examined between four and six times. Nearly 79 percent of the sites (53 of 67) were positive for *Giardia* on multiple

tests. Tabulation of sites that were positive on only one occasion (n=18 for either *Giardia* or *Cryptosporidium*) showed that six sites were uniquely positive in the first study (1988-90) while 12 sites were uniquely positive in the second study (1991-93). Therefore, when the data were weighted for the number of samples processed, there was no tendency to find more sites positive for cysts or oocysts in either study.

Table 4 shows that the majority of sites were positive for *Giardia* cysts 40-60 percent of the time (e.g., two to three times based on five analyses). Most sites were positive for *Cryptosporidium* oocysts 60-80 percent of the time. This range of parasite occurrence is consistent with the results of other investigators (19-23). Ongerth and Stibbs (23) found *Cryptosporidium* oocysts in all of the samples from the six rivers (four in the state of Washington, two in California) they examined. The occurrence of *Giardia* ranged from 20 to 80 percent, and *Cryptosporidium* ranged from 70 to 100 percent, in three watersheds examined by LeChevallier et al. (9). Variations in parasite occurrence were noted during an extensive survey of three watersheds in the United Kingdom where *Cryptosporidium* oocysts were infrequently detected in two of the rivers (1 to 7 percent); in the third river system oocysts were observed in an average of 52 percent of the samples (24). When *Cryptosporidium* oocysts were detected, the range of oocyst levels in the rivers was similar and the arithmetic average of positive results was actually higher in the watersheds with infrequent detection.

Variation in raw water levels important

From a water supply perspective, the variation in source water pathogen levels is important. For example, a water purveyor drawing from a watershed with a low frequency of cyst or oocyst detection might become complacent because of the infrequent detection of waterborne protozoa. However, during episodes of peak cyst or oocyst densities, these systems may need to provide roughly the same amount of treatment as

watersheds with a higher frequency occurrence of parasites. Because a single peak event can overwhelm treatment barriers and result in waterborne illness, treatment plants should be designed and operated in a manner that can handle such events and ensure a consistently low level of microbial risk.

USEPA has proposed (1) four possible approaches for analyzing data collected through the ICR: (1) use the arithmetic mean for the data; (2) use the geometric mean for the data; (3) use the 90th percentile of the highest value based on a distribution of the results; or (4) use the maximum count.

In all cases the USEPA has proposed to count the limit of detection when cysts or oocysts are not found (e.g., a value of <1.0 cyst/L becomes a calculated value of 1.0 cyst/L).

Analysis of the combined data from the 1988-90 and 1991-93 studies allowed the four methods for tabulating *Giardia* and *Cryptosporidium* data to be evaluated (Table 5). In addition, a fifth method (termed maximum detected level) was added which provides an alternative calculation when the maximum count was based on a nondetect value (e.g., limit of detection). The logarithmic difference between these calculated values and the estimated level for a 10^{-4} annual risk of infection for *Giardia* and *Cryptosporidium* (0.0007 cysts/100 L and 0.003 oocysts/100 L respectively) permits a theoretical evaluation of the level of treatment required for each organism.

The average treatment requirement for *Giardia* based on the geometric mean, the arithmetic average and maximum level was 5.38, 5.52, and 5.85 \log_{10} , respectively (Figure 1). The average treatment requirement for *Cryptosporidium* based on the geometric mean, the arithmetic average and maximum level was 4.49, 4.68, and 5.05 \log_{10} , respectively (Figure 2). All plants required more than the minimum 3.0 \log_{10} level of treatment as outlined in the SWTR (25). Overall, the

difference between treatment requirements based on the geometric mean (the lowest value) and the maximum level observed (the highest value) averaged 0.47 \log_{10} for *Giardia* (range=0.1 - 1.2 \log_{10}) and 0.56 for *Cryptosporidium* (range=0.01 - 1.59 \log_{10}).

The intent of establishing treatment goals based on the monitoring data is to aid the plant supervisor and the design engineer in the routine operations and design of the treatment facility. Once a database of results was established, routine operations could be based on achieving a particular level of treatment without the need for constant parasite monitoring. Using the geometric or arithmetic mean for determining this routine level of treatment is problematic because the parasite levels are frequently higher than the mean.

The 90th percentile or the maximum level observed is a more appropriate parameter for setting treatment goals. The 90th percentile is an arbitrary standard, but does account for unusual circumstances (e.g., flooding, turbidity peaks, spills) when the utility would normally perform additional treatment. The 90th percentile would encompass the normal variation in parasite levels during routine operations. The relationship between the samples where cysts were not detected (nondetect values) and the samples where cysts were observed is noticeable. This consistency between actual counts and nondetect values permits an estimation of the 90th percentile, even when cysts or oocysts are infrequently detected. Another advantage of the 90th percentile approach is the possibility of estimating a confidence interval around the linear fit of the data. In the authors' experience, as more data are collected, the linear fit is improved, and the 95 percent confidence interval is reduced. With this analytical approach, there is an incentive for utilities to perform increased raw water monitoring because the highest values can be eliminated from consideration.

At least 10 samples are required to determine the 90th percentile. Within the database examined, only seven systems were examined 10 or more times (Figure 3).

Figure 1

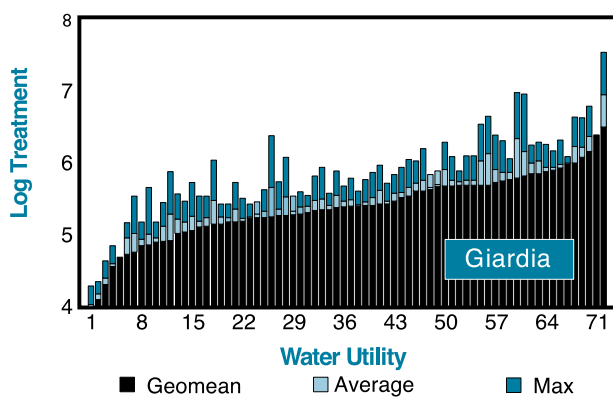


Figure 2

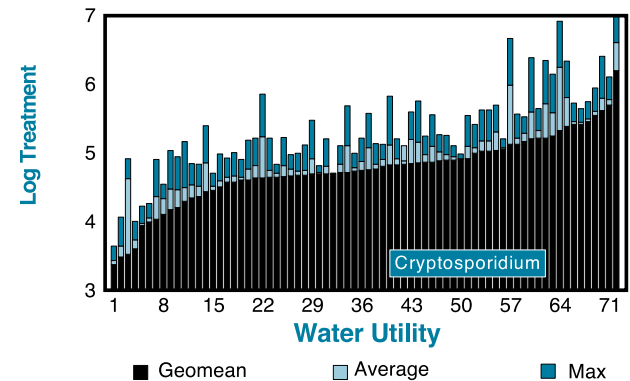


Table 5

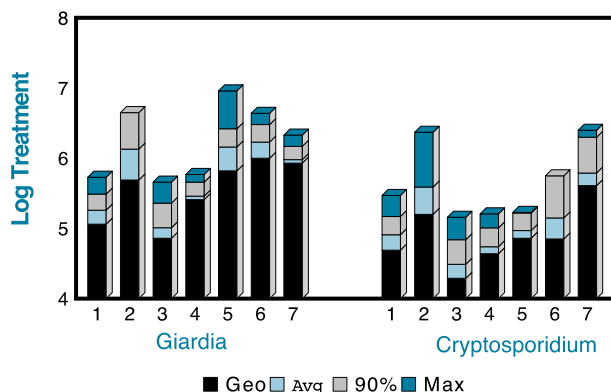
Tabulation of *Giardia* and *Cryptosporidium* Data for each surface water treatment plant

Date	<i>Giardia</i> /L	<i>Cryptosporidium</i> oocysts/L
June 27, 1989	<242	484
July 8, 1991	11	39
December 2, 1991	<12	24
May 11, 1992	<4	12
August 3, 1992	<42	42

Comparison of treatment goals for the geometric means, arithmetic average, 90th percentile, and maximum count showed that the difference between the different calculations averaged 0.71 log₁₀ for *Giardia* (range 0.36 to 1.1 log₁₀) and 0.78 log₁₀ for *Cryptosporidium* (range 0.37 to 1.2 log₁₀).

When data are limited (e.g., <10 samples) the maximum level observed would provide protection against possible peak occurrences of pathogens. One limitation with the maximum level guideline occurs when the maximum count is a nondetect value. For the *Giardia* data presented in Table 5 the maximum count was a nondetect value for 17 (23.6 percent) of the 72 systems. For six of these systems, all values were nondetect (i.e., *Giardia* cysts were not found in any samples). For nine of the systems, the maximum nondetect value was <0.5 log₁₀ higher than a value where an actual cyst had been detected. For three systems, the maximum nondetected value ranged between 1 and 2 log₁₀ higher than an actual observed value. For *Cryptosporidium*, the maximum count was a nondetect value in 10 of the 72 systems (13.9 percent). The difference between the maximum count and the maximum detected level value (i.e., the next highest value when the maximum level is a nondetect) for *Cryptosporidium* averaged 0.24 log₁₀ (range 0.006 to 0.52).

Figure 3



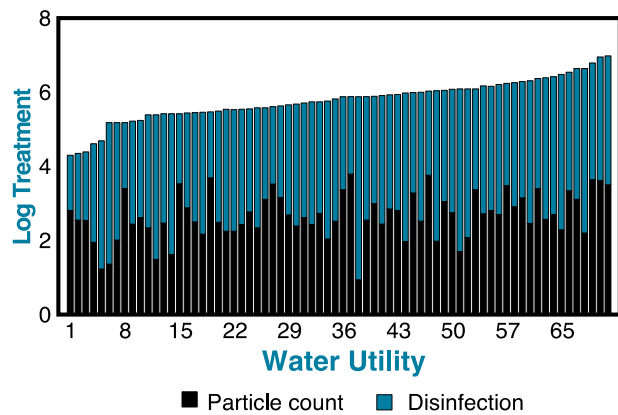
An example of the impact of a nondetect value on the calculated level of *Giardia* is illustrated by the data from site 72 (Table 6). *Giardia* cysts were detected only once among the five samples collected. The sample collected on June 27, 1989, was during flood stage of the river and raw water turbidity levels were estimated at 3,000 NTU. The large amount of debris in the sample clogged the filter after 3 gal (11.3L) was collected and resulted in a concentrated pellet of 55 mL. Because the analytical methodology limits the size of the pellet processed to 1 mL, the sample would have required processing 55 times (approximately 3 months of work) to analyze all 3 gal. Because the assay also requires a monolayer of material to be placed on the filter, only a small fraction of the processed sample was analyzed. The net result was that an equivalent volume of 0.004 L was analyzed. No cysts were detected in the sample, but two oocysts were. The statistical reliability of a value based on no observed organisms (or for *Cryptosporidium*, a count of two oocysts) is extremely large (greater than 10 fold). Additional testing during 1991 to 1992 failed to produce such high results. The impact, however, of this nondetect value results in a maximum observed count treatment goal of 7.5 log₁₀ for *Giardia* and 7.2 log₁₀ for *Cryptosporidium* removal, inactivation or both. A more realistic treatment goal would be the next highest value, which in this case was 42 cysts/L, or a treatment goal of 6.8 log₁₀. Providing routine treatment at this level ensures ample protection for the situation in which *Giardia* was observed (11 cysts/L requires 6.2 log₁₀ treatment to achieve 10⁻⁴ annual risk of *Giardia* infection) and is more comparable to the arithmetic or geometric mean treatment goals for *Cryptosporidium* (6.6 and 6.2 log₁₀, respectively).

Treatment objectives can be optimized

Once the raw water monitoring has been completed and the treatment goals for a particular plant established, the utility can focus options to routinely achieve these goals and balance them with other water quality objectives. For most systems, this means optimizing particle removals through coagulation, sedimentation and filtration, and balancing disinfection so that adequate microbial inactivation is achieved along with minimal DBP formation. Improving particulate removal obviously lessens reliance on disinfection.

For this study, particle counting (total particles > 3 m) was used to evaluate the removal of parasites through the treatment process. Previous studies have shown correlations between removals of *Giardia* and *Cryptosporidium* and particle counts (9,26). In this study, the systems achieved an average 2.7-log₁₀ removal of particles >3 m (range=0.94 - 3.8 log₁₀). The difference between the average level of particle removal for each system and the treatment goal (based on the geometric mean of raw water parasite counts) estimates the level of disinfection

Figure 4



that will be required under the ESWTR. For *Giardia*, the average system would need to supplement sedimentation and filtration treatment with an additional 2.7 log₁₀ of disinfection (Figure 4). All systems examined required more than the minimum 0.5 log₁₀ disinfection as outlined in the SWTR (25). However, when the level of *Giardia* inactivation was estimated at each facility, the average system applied sufficient CxT to achieve 5.1-log₁₀ disinfection. This estimate was based on the average pH (7.5), temperature (15°C), and free chlorine residual (1.4 mg/L) for the samples analyzed (contact times were adjusted for short circuiting in the basins) (12), and will obviously change for different seasonal conditions. However, when this estimate was compared to the level of disinfection necessary to achieve the 10⁻⁴ annual risk of infection, 64.3 percent of the systems exceeded the amount of disinfection necessary to control *Giardia* and an additional 15.7 percent were within 1 log₁₀ of the treatment goal. An estimated 20 percent of the systems would need to increase disinfection levels (2 - 3 log₁₀), whereas another 20 percent could reduce the level of disinfection used by 10 log₁₀ or more.

The importance of these estimates is to show that many systems are currently meeting or exceeding the required level of treatment—even for the ESWTR guidelines for *Giardia*—and that a substantial number of systems could reduce disinfection practices without impacting microbial protection. This finding is similar to previous results showing that 76 percent of the systems examined exceeded the 10⁻⁴ risk level for *Giardia* (7). Additionally, approximately 80 percent of these systems currently meet the stage 1 D/DBP levels of 80 g/L for THMs and 60 g/L for haloacetonitriles despite the wide use of prechlorination (27). In these studies, however, approximately 80 percent of the CxT credit for *Giardia* inactivation came from prechlorination, usually because of the long contact times in the sedimentation basins. Elimination of prechlorination CxT credit under the D/DBP Rule would jeopardize the ability of utilities to provide adequate *Giardia* disinfection. Moreover, reliance on

only postfilter disinfection removes one of the elements of the multiple barrier protection by not providing options for backup disinfection should postfiltration disinfection fail. Because most systems would probably still apply some prechlorination (even if no disinfection credit is applied) to control algal growths and to improve filter performance and oxidation for iron, manganese, and taste and odor compounds, DBP levels could actually increase because the water would have to be rechlorinated for postfiltration CxT credit. It is important that USEPA more carefully study the integration of the ESWTR and D/DBP rules and cautiously approach the issue of changing pre-disinfection practices before these regulations are promulgated.

Plant optimization, chlorination have prevented cryptosporidiosis recurrences

Comparing the difference between particle count removals and treatment goals for *Cryptosporidium* reveals that the average system will need to provide 2.0-log₁₀ disinfection (range=0.5 - 2.6 log₁₀) to meet a 10⁻⁴ annual risk of infection. Although there is not a large database of disinfection data for *Cryptosporidium*, recent studies have shown that a combination of free chlorine (1 mg/L for 60 min) and chloramines (2 mg/L for 240 min) resulted in 1.6-log₁₀ of oocyst inactivation (28). Other studies have suggested that multiple stresses could increase oocyst inactivation under field conditions (29-31). Although much more disinfection data are needed, especially under field conditions, the reassuring message is that the combination of effective turbidity and particle count reductions with chlorination may already be achieving risk assessment goals for *Cryptosporidium*. Indeed, plant optimization and chlorine disinfection has been sufficient to prevent reoccurrences of cryptosporidiosis outbreaks in the Carrollton Ga., Talent Ore., and Milwaukee Wis. systems. Because multiple application of disinfection may be important for *Cryptosporidium* inactivation, again, it is critical that USEPA move cautiously regarding the elimination of pre-disinfection practices.

Plant effluent results examined

For the 1991-93 study, *Giardia* cysts were detected in filtered plant effluent water on 12 occasions (4.6 percent of 262 samples). When detected, *Giardia* levels averaged 2.6 cysts/100 L (range=0.98 - 9.0 cysts/100 L). Microscopic examination of the cysts suggested that the majority of the organisms were dead. More than 86 percent of the 22 cysts found in the water samples lacked observable internal morphological structures, while only one isolate had a peritrophic space (a potential indicator of viability). Because microscopic indicators of viability are very broad and probably greatly over estimate the potential to cause illness, there is little reason to believe that any community was at risk for an outbreak of giardiasis.

Cryptosporidium oocysts were observed in 35 (13.4 percent) of 262 plant effluent samples. When *Cryptosporidium* was detected, levels averaged 3.3 oocysts/100 L (range=0.29 - 57 oocysts/100 L). Microscopic examination of the oocysts showed that 27 (35 percent) of 77 isolates contained sporozoites. It is uncertain whether any of these sporozoites were viable.

Overall, 16.8 percent of the samples (44 of 262) contained *Giardia*, *Cryptosporidium*, or both. These levels are lower than the 39 percent rate for finished water reported in the previous study (7), but probably reflect the lower cyst and oocyst occurrence in the raw water and improved treatment plant performance. The relationship between the levels of parasites in raw water and their detection frequency in filtered water has already been discussed (7,9). In the 1991 study, the average plant effluent turbidity level was 0.19 ntu, and 80.5 percent of the systems had turbidity levels less than 0.5 ntu. In the current study, the average plant effluent turbidity level was 0.14 ntu and 98.9 percent of the plants had turbidity values less than 0.5 ntu. The data suggest that implementation of the SWTR (25) has resulted in improvements in water quality.

A summary of the occurrence data for *Giardia* and *Cryptosporidium* in filtered effluent water for all samples collected between 1988 and 1993 showed that almost 28 percent of the plants (20 of 71) were positive for *Giardia* cysts on one or more sampling occasions. A total of 14 systems (19.7 percent) were positive for cysts on only one occasion, whereas six systems were cyst-positive two or more times. For *Cryptosporidium*, 32 of 71 plants (45 percent) were consistently negative, while 24 plants were positive once and 15 plants were oocyst-positive two or more times. Forty-four of 71 (62 percent) of the plants were positive for *Giardia*, *Cryptosporidium*, or both at one time or another. The results suggest that if sampled often enough, *Giardia* or *Cryptosporidium* will eventually be detected at nearly every plant. Because the parasite assay does not indicate viability or virulence, the results do not necessarily indicate that these systems are at risk from waterborne pathogens. However, the results do suggest that controlling coagulation and filtration procedures for removal of *Cryptosporidium* will be more difficult than control of *Giardia*.

Because conventional filtration will remove 99 to 99.7 percent of cysts and oocysts (25), it is reasonable to expect that detection of cysts and oocysts in the raw water will result in detectable levels in filtered effluents. Because microscopic detection of cysts and oocysts in treated water is an inefficient method for determining plant performance and the confidence interval of individual results is large, the best use of limited analytical resources would be to concentrate on developing a raw water database for *Giardia* and *Cryptosporidium*

occurrence and to use other means, such as particle counts, to determine treatment plant performance (9,25).

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Abbreviations:	
n	The number of samples collected
Avg	Arithmetic average
Geo-X	Geometric mean
90 percent	Calculation of the 90th percentile, for sites with >10 samples
Max	Maximum count observed
Max2	Maximum detected level (when the maximum count was based on a nondetect value) or arithmetic average, whichever was greater

The Public Health Response to an Outbreak*

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Introduction

The words 'epidemic' and 'outbreak' are synonymous and can be defined as the occurrence of cases of disease that is in excess of what would normally be expected (1). The word 'outbreak' is often preferred because it is less likely to be misinterpreted or sensationalized. In the United States, local and state health departments are the front line respondents to outbreaks of disease within their jurisdiction. Outbreaks often represent a crisis situation that concurrently necessitates intense thought, coordinated action, and crisis management by the public health community. The successful management of an outbreak requires that public health officials be able to recognize the occurrence of an outbreak, mobilize and coordinate resources, conduct a thorough investigation, and rapidly institute control measures. An outline of the basic steps to conducting an outbreak investigation are found in Table 1. In this article we provide an overview to the detection and investigation of outbreaks, institution of control measures, and administrative aspects of the public health response.

Detection and Confirmation of an Outbreak

For public health agencies to respond to an outbreak there first must be recognition that an outbreak has occurred. Outbreaks are frequently recognized by health care providers or public health workers who observe an increase in cases of disease or constellations of unusual signs and symptoms. For example, in 1989, physicians who evaluated three patients with eosinophilia and severe myalgia in New Mexico reported these cases to the New Mexico Department of Health. These reports stimulated an investigation that led to the discovery of a nationwide outbreak of the eosinophilia-myalgia syndrome associated with consumption of L-tryptophan produced by a single pharmaceutical company (2). Outbreaks due to some enteropathogens, including unusual *Salmonella* serotypes, are often noted first by state public health laboratorians who recognize an increase in the number of isolates (3). Finally, public health officials may recognize outbreaks of diseases which are reported through routine notifiable disease surveillance when there is an increase in reported cases of a disease.

Once an outbreak is suspected, it is essential to determine if reported cases represent true cases of disease. Misdiagnosis or laboratory error need to be ruled out by examination of cases, review of charts, and repeating laboratory tests when indicated. For example, a pseudo-outbreak of *Mycobacterium xenopi* in a Michigan hospital was uncovered when case-patient charts were reviewed and the majority of those with isolates did not have disease consistent with *M. xenopi* infection (4). Epidemiologic investigation then revealed that cases were associated with undergoing bronchoscopy with a

bronchoscope that had been rinsed with contaminated tap water after disinfection. The presence of an outbreak can be confirmed only if there has been a true increase in cases of the disease over a baseline number of expected cases.

Institution of Control Measures

When the occurrence of an outbreak has been confirmed, measures to control the outbreak should be instituted as quickly as possible. For some diseases (e.g., syphilis, tuberculosis, hepatitis A) specific control measures, such as treatment of cases, cohorting, contact investigation, and prophylaxis, are well established and can be initiated simultaneously with the investigation. However, when the source of the outbreak, agent, or both is unknown, an epidemiologic investigation must be conducted before specific control measures can be implemented. The decision to take public health action involves weighing the strength of the epidemiologic data, the likely cost of inaction with regard to morbidity and mortality, the cost of taking action in terms of inconvenience, financial loss, and possible complications of the action (e.g., burn injuries secondary to boil water orders). Public health officials must quickly assess these factors and promptly communicate a balanced picture to decision makers. When epidemiologic data implicates a source or mode of transmission of illness, prompt consideration should be given to immediate intervention. In general, public health officials should not wait for laboratory confirmation of their epidemiologic findings to take action because waiting for requisite laboratory data may substantially delay the institution of control measures.

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Table 1
Basic steps to an outbreak investigation

1. Verify the existence of an epidemic
2. Confirm the diagnosis
3. Take immediate control measures (if indicated)
4. Develop a case definition
5. Institute case-finding and count cases
6. Collect and orient the data in terms of time, place and person
7. Develop hypotheses explaining the specific exposure that caused disease
8. Test hypotheses using appropriate epidemiologic and statistical methods
9. Plan additional systematic studies
10. Execute and evaluate control and prevention measures
11. Continue surveillance
12. Communicate findings

Adapted from Selected Bibliography references 1 and 2

Administrative Aspects

The public health response to an outbreak is complex and substantially transcends the issues regarding the scientific investigation of the outbreak. Other important considerations include the need to attend to establishing relationships, logistical considerations, resource management, planning, and coordinated communication and action; failure to address these considerations likely will hamper the response to the outbreak.

For example, an important first step is to establish the outbreak investigation team, define its leadership, and specify goals early in the investigation. The leadership must organize the team to assure the assignment of specific roles and an appropriate division of labor. Resources that are needed to conduct the investigation should be assessed early and, if needed, additional resources should be sought immediately. When outbreaks require the involvement of personnel from local, state, and federal agencies, it is essential that collaborative and consultative relationships between health officials be established immediately. Local and state officials generally bear the final responsibility for the response to an outbreak in a specific jurisdiction. Each aspect of the

investigation should be prioritized to allow team members to optimize their efficiency, and the team should meet regularly to review the progress of each portion of the investigation and redirect resources to complete the essential tasks. Collected data should be routinely compiled, discussed daily by the investigative team, and used to further direct the investigation.

Because the collection, testing, and reporting of specimens obtained from cases and the environment to the outcome of an outbreak investigation, whenever possible, laboratory scientists should be included in the planning and conducting of the outbreak investigation. Consideration should be given to dedicating personnel to assure proper collection, recording of laboratory data, and transport of laboratory specimens. In addition, outbreak investigations often may require the expertise and cooperation of persons in other disciplines (e.g., engineers, agriculture and industry officials, veterinarians, and entomologists) to conduct the investigation; the roles of these experts should be defined early in the investigation. This type of multi-disciplinary approach adds to the complexity of the overall investigation, often necessitating increased effort and time to communicate findings and coordinate the investigation.

Because outbreaks often garner intense public interest, the news media may seek to report large amounts information about outbreaks in a timely manner, including facts, controversies, and stories of human interest. The needs of public health officials usually are specifically directed toward informing the public of measures to control and prevent disease while avoiding the creation of biases which might affect the scientific investigations. The differing priorities of the news media and public health may create a tension between these two groups. To facilitate the provision of information a single public health spokesperson should be designated as the main communicator with the news media. This person should be in regular and direct contact with the investigation team, should provide the media regularly scheduled updates regarding the outbreak, act as a buffer to allow the outbreak investigation team uninterrupted time to conduct the investigation, and should interpret and communicate important findings using messages that can be readily understood and used by the general public.

Investigational Aspects

Following confirmation of the occurrence of an outbreak, the investigator must enhance surveillance to identify additional cases. Many cases initially may not be recognized because of inadequate testing of patient specimens and underreporting of cases to local public health departments. To enhance surveillance and case-finding, public health officials must inform the medical community about the presence of an outbreak, clinical manifestations, laboratory tests used to confirm the

diagnosis, available treatment, prophylaxis of case contacts, means of preventing secondary spread, and the importance of promptly reporting all suspected cases to the health department. When appropriate, increased laboratory testing should be encouraged and, if necessary, supported logistically and financially. The health department may decide to conduct active surveillance for cases by directly contacting health care providers and laboratorians.

Case definitions have great importance in enhancing case-finding, delineating the study population, and describing criteria for the illness under investigation. The three basic components of a case definition are specification of 1) conditions (e.g., signs and symptoms and laboratory results); 2) the time period of exposure or onset of illness; and 3) relevant geographic factors (e.g., place of residence, employment, or recreational and social activities). For the purpose of reporting of cases by health care providers, case definitions with both high sensitivity and specificity are preferred. However, in some situations a relatively sensitive, but less specific case definition, may be used to enhance case finding and improve characterization of the spectrum of disease.

Information gathered about cases should be evaluated in terms of on the characteristics of person, place, and time, and used to construct epidemic curves, spot maps, and other characteristic profiles shared by case-patients. This information can then be used to formulate hypotheses about the source or spread of the problem. This process also entails extensive interview of case-patients (particularly those who became ill early in the outbreak), determining the order and timing of key events and activities, and inspecting the site or sites suspected to be involved in the outbreak. In addition to formulating hypotheses about the source and the mode of transmission, the investigation can also assess the pathogenic mechanisms, presence of a dose response, risk factors for illness, effectiveness of the control measures utilized, sequelae of disease, and costs engendered.

The identification of hypotheses and other key questions will guide the design of epidemiologic, laboratory, and environmental studies. Choice of study populations, control groups, means of data collection (personal interview, telephone interview, or self-administered questionnaire) and the design of questionnaires must be considered carefully to assure validity and precision of studies. Epidemiologists need to be creative and resourceful when considering study designs to answer specific questions. For example, the use of multiple different control groups during investigations of hantavirus infections in the Southwest was critical in permitting investigators to elucidate different factors associated with exposure to infection (5). During the

large cryptosporidiosis outbreak in Milwaukee due to community-wide exposure to a contaminated public water supply, the investigation of special populations such as short-term visitors who had only brief exposure to Milwaukee water was useful to determine the incubation period, duration of community exposure, and the frequency secondary transmission (6). In these examples, restriction of the investigations to single control groups or community members, respectively, would likely have precluded the determination of answers to important questions.

Questionnaires should be designed to allow the testing of identified hypotheses, evaluation for confounding and effect modification, and classification of varying levels of exposure and illness. Collection of data extraneous to testing the identified hypotheses should be avoided. Maintaining a questionnaire as brief, clear, and easy to use as possible results in higher response rates and more timely data collection. To accomplish this, questionnaires should undergo extensive critique by colleagues, be revised as needed, and, when possible, be pre-tested on people representative of those who will ultimately be administered the questionnaire. Designing questionnaires is often a time consuming and difficult process, but is worth the effort since there is no analysis that can overcome collection of poor data. There is great truth in the maxim, "garbage in, garbage out."

Investigations should be carried to completion. Data collected during the initial investigation should be evaluated promptly and used to direct on-going hypothesis generation. Surveillance should be maintained after the outbreak appears to subside and the efficacy of the control measures assessed. A final report should be written promptly to document the investigation, the findings, and recommendations made. Consideration should be given to the broader implications of the investigation's findings for public policy, industry, and science. For investigations that make substantial contributions in these areas, the investigators should communicate of their findings in a timely manner to colleagues in public health bulletins, abstracts, presentations, and journal articles.

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Key Words and Phrases

- Acid-fast stain:** The nonspecific staining procedure used by most medical laboratories for detection of *Cryptosporidium* oocysts in stool specimens.
- Action level:** A specified concentration of a contaminant in water; if this concentration is reached or exceeded, certain actions (e.g., further treatment and monitoring) must be taken to comply with a drinking-water regulation.
- Available chlorine level :** See “Free residual chlorine level.”
- Backflow:** A reversal of the normal flow of water or other liquid caused by a negative-pressure gradient (e.g., within a water system). Also known as “siphonage.”
- Boil water advisory:** A statement advising persons to boil tap water before use because of suspected microbial contamination.
- Case definition:** A standard set of criteria for deciding whether an individual should be classified as having a disease.
- Coagulation:** The process of adding chemicals to water to gather particles for removal by sedimentation and/or filtration.
- Coliforms:** Bacteria used as a measure of potential fecal contamination. Elevated coliform levels indicate poor water quality.
- Contact time:** The length of time water is exposed to a disinfectant (e.g., chlorine contact time).
- Cross-connection:** Any physical connection between the water pipe(s) delivering water to a customer and a source of contamination (e.g., a wastewater line) that might allow that contamination to enter the water pipe.
- Cyst:** The infectious stage of *Giardia* and some other protozoan parasites that has a protective wall, which enables it to survive in water and other environments.
- DFA test (direct fluorescent antibody test):** A test for *Cryptosporidium* that uses fluorescence-labeled antibodies to detect oocysts under a microscope, used by some medical laboratories for the detection of *Cryptosporidium* in stool specimens.
- Disinfection:** The treatment of water to inactivate, destroy, or remove pathogenic (disease-producing) bacteria, viruses, parasites, and other microorganisms for the purpose of making the water microbiologically safe for human consumption.
- Disinfection byproducts:** Chemicals formed in water by reactions between organic matter and disinfectants.
- Distribution system:** System of water pipes, storage reservoirs, tanks, and other means used to deliver drinking water to consumers.
- EIA (enzyme immunoassay):** A specific antigen or antibody detection test used by some medical laboratories for the detection of *Cryptosporidium* in stool specimens.
- Endemic level:** The expected or “background” level of a disease or infectious agent within a given area.
- Epidemiologically linked case:** A case in which the patient has had the same exposure as one or more persons who have/had the disease.
- Excystation:** The release of the internal contents of cysts or oocysts. The mechanism by which ingested *Cryptosporidium* oocysts cause human and animal infection.
- Fecal coliforms:** An easily measured subset of the coliform group of bacteria, primarily *Escherichia coli*, that is found mainly in the gut of warm-blooded animals, including humans. Its presence in water indicates that fecal pathogens (e.g., *Cryptosporidium*, *Giardia*) may also be present.

Fecal-oral route: Transmission involving oral ingestion of *Cryptosporidium* or other organisms that have been excreted through feces.

Filter backwash: Water that contains material obtained by reversing the flow of water through a filter to dislodge particles.

Filtration: The process of removing suspended particles from water by passing it through one or more permeable membranes or media of small diameter (e.g., sand, anthracite, or diatomaceous earth).

Finished water: The fully treated water (i.e., drinking water) which leaves a treatment plant.

Flocculation: The water-treatment process after coagulation that uses gentle stirring to cause suspended particles to form larger, aggregated masses (floc). The aggregates are removed from the water by a separation process (e.g., sedimentation, flotation, or filtration).

Free, residual chlorine level: The concentration of chlorine in water that is not combined with other constituents and thus serves as an effective disinfectant. Also known as “available chlorine level.”

Ground water: Water extracted from under the ground (i.e., from a well or spring).

Immunocompromised, immunosuppressed, immunodeficient, immune-suppressed: Terms used to describe a person whose immune system has a reduced ability to protect the body from infection.

Indicator organism: An easily measured microorganism, or group of related organisms, that indicates by its presence or concentration that pathogens may be present.

Information Collection Rule: A U.S. Environmental Protection Agency (EPA) regulation that requires water systems using surface water that serve 100,000 or more people and water systems using ground water that serve 50,000 or more people to conduct monitoring and/or treatment studies. It also requires these water systems to report data to the EPA and to make their findings public if required by the state. This data will be used in developing future regulations for disinfectants/disinfection byproducts and enhanced surface water treatment.

Laboratory-confirmed case: A case that is confirmed by analysis of a stool, blood, or tissue sample in a reliable laboratory (as opposed to a case identified only by a person’s symptoms or reported symptoms).

Maximum-contaminant level: The maximum permissible concentration (level) of a contaminant in water supplied to any water consumer.

Multiple barrier system: The use of more than one barrier or protection and treatment in series to ensure the safety of drinking water. Multiple barriers may include wastewater collection and treatment, protection of water sources, disinfection, protection of water quality during storage and distribution, aggressive management, and adequate training.

Nephelometric turbidity units (NTU): Measurement of turbidity (lack of clarity) of a sample of water.

Oocyst: The infectious stage of *Cryptosporidium parvum* and some other coccidian parasites. An oocyst has a protective shell-like wall that facilitates its survival in water and other environments.

Point-of-use filter: Water filter installed at point just before water is drunk. A faucet, for example, is a “point-of-use.”

Protozoan: One-celled microscopic organism.

Raw water: Untreated, unfiltered water.

Reverse osmosis: A process that removes dissolved salts, metallic ions, and microbes from water by forcing it through a semipermeable membrane.

Sedimentation: The process of settling out suspended solid particles to the bottom of water.

Shedding: Releasing infective particles; excreting contagious germs.

Siphonage: See “backflow.”

Source water: Untreated, unfiltered water (e.g., water in lakes, rivers, and reservoirs) used to produce drinking water. Also known as “raw water.”

Spiking: A laboratory research method of adding oocysts to water to determine if filtration systems are functioning properly; intentionally contaminating water with oocysts or other microorganisms.

Stool specimen: A small sample of feces to be tested for the presence of oocysts or other microorganisms.

Submicron: Less than 1 micron (1 millionth of a meter).

Supportive laboratory results: Laboratory results that support a diagnosis but do not prove it.

Surface water: The water in lakes, rivers, reservoirs, ponds, and oceans.

Surface Water Treatment Rule (SWTR): EPA regulation that requires water systems using surface water, and ground water under the direct influence of surface water, to disinfect their waters. It also requires all such systems to filter their water, unless the system can meet certain EPA-specified criteria.

Suspected case: An instance of disease (e.g., cryptosporidiosis) that is suspected but is not laboratory confirmed.

Total chlorine: Free and bound atoms of chlorine in water calculated together.

Total Coliform Rule: EPA regulation that sets a maximum limit and monitoring requirements for total coliforms in drinking water. Total coliforms, which are not generally pathogenic, are a group of closely related bacteria used to indicate contamination problems in the distribution system, and thus the potential presence of waterborne pathogens.

Total coliforms: Nonfecal and fecal coliforms calculated together to measure contamination of a water sample.

Total coliform test: A measure that detects the presence or number of living coliform bacteria in a water sample.

Transmission: Passing of infection from one person or animal to another.

Turbidity: The level of suspended matter (e.g., clay, silt, or plankton) in water, which causes a loss of clarity or transparency.

Watershed: An area from which water drains to a particular body of water.

Watershed-control program: An effort designed to prevent contamination of source water.

Figure A
Governmental Chain of Command Notification Contacts (sample)

An example of how to fill out this form is given below. A reproducible form is provided on the following page.

Name (alphabetical)	Agency	Title	Office Phone Phone or Beeper	After-hours	Fax Number	E-mail Address
Aaronson, Aaron	Water Control Center	Assistant Director	555-1234	555-4321	555-5678	aaronson@water.com
Grimm, Benjamin	Water Utility	Assistant Director	555-2345	555-5423	555-6789	grimm4@water.com
Masterson, Eric	EPA Regional Office	Asst. Region. Director	555-2344	555-7809	555-1092	masterson@epa.com
Pym, Janet	Mayor's Office	Executive Assistant	555-4667	555-7654	555-8901	pym@cityhall.gov
Richards, Susan	Public Affairs Office	Public Affairs Officer	555-5551	555-1111	555-5556	richards@cityhall.gov
Stark, Anthony	Dept. of Environ. Quality	Water Quality Assistant	555-2349	555-6543	555-0912	stark@deq.gov

Major Water Users Notification Contacts

Name (alphabetical)	Agency	Title	Office Phone Phone or Beeper	After-hours	Fax Number	E-mail Address

Figure C
Media Contact Form

Name (alphabetical)	Media Affiliation	Phone	FAX	E-Mail	Comments

Figure D Information About Self-reported Or Physician-reported Cases

Name of person who is ill (Last, First) _____ Today's date |__|__|_|_|_|_|_|_|_|_|_|_|
MM DD YY

Address _____ Telephone No. _____(home)
_____ (work)

Sex _____ Age _____ Symptoms onset date |__|__|_|_|_|_|_|_|_|_|_|_|
MM DD YY

Still having symptoms now? Y N Total duration of symptoms _____

Seen a physician? Y N If yes, name and number _____
If yes, diagnosis _____

Any laboratory work done? Y N If yes, what type (probe for blood and stool)

If yes, results (probe for *Cryptosporidium*,
Giardia, *Cyclospora*) _____

Any of the following symptoms?	Comments
Diarrhea Y N	_____
Nausea Y N	_____
Vomiting Y N	_____
Fever Y N	_____
Weight loss Y N	_____
Cramping Y N	_____

Immune compromised in any way (HIV, cancer chemotherapy, organ transplant recipient)?
Y N If yes, specify _____

Are other family members ill with similar symptoms? Y N If yes, how many? _____
If yes, specify

Relation	Sex	Age	Date became ill
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Caller believes potential vehicle or source of the infection is _____

Report completed by _____

Figure E

Note: Text in regular type is to be read to the respondent.

Text in CAPITALS is an instruction for the interviewer and should not be read to the respondent.

Text in *italic* is a suggestion for modification of the questionnaire to tailor the document to the ongoing investigation.

CASE QUESTIONNAIRE FOR CASE-CONTROL STUDY

ID:

Interviewer: _____

Date of Interview: --
MM DD YY

Interview Outcome Code:

TITLE OF YOUR SURVEY/CASE-CONTROL STUDY

WHEN YOU MEET THE SUBJECT:

Hello, my name is (YOUR NAME). I am from (STATE YOUR AFFILIATION). We are conducting a study designed to examine factors associated with the development of *state the disease you are studying*. I am here to speak with you about this study.

ARRANGE PRIVATE SETTING FOR INTERVIEW IF NOT DONE BY PHONE.

As I just mentioned, the purpose of this study is to *state specifically what the primary goal of the interview is, i.e., to collect information on exposure factors for acquiring Cryptosporidium*. Your help in this study is very important. Your participation is voluntary and all information you give will be kept confidential to the extent legally possible. Some of the questions may be sensitive. You may refuse to answer any question at any time. Neither your name nor any identifying information will appear on any report of the study.

ADMINISTER CONSENT FORM.

BEGIN INTERVIEW.

SECTION A: BACKGROUND INFORMATION

CIRCLE CODE FOR PARTICIPANTS GENDER

MALE..... 1
FEMALE..... 2

I would like to begin by asking you some basic questions about yourself.

A1. What is your full name? (LAST, FIRST, MI) _____

A2. What is your home address? (IF RESPONDENT REFUSES, ATTEMPT TO OBTAIN HIS/HER ZIP CODE, EXPLAINING THAT INFORMATION ON THE GENERAL AREA WHERE HE/SHE LIVES IS VERY IMPORTANT FOR EXPOSURE ASSESSMENT.)

A3. What is your work address? (IF RESPONDENT REFUSES, ATTEMPT TO OBTAIN HIS/HER ZIP CODE, EXPLAINING THAT INFORMATION ON THE GENERAL AREA WHERE HE/SHE WORKS IS VERY IMPORTANT FOR EXPOSURE ASSESSMENT.)

A4. What are your home and work phone numbers? (IF SUBJECT REFUSES FILL IN 8s IN THE BOXES. IF NONE, FILL IN 9s.)

--
HOME

--
WORK

A5. What is your date of birth?

-
MONTH YEAR

A6. What racial or ethnic group do you consider yourself part of?

WHITE, NON-HISPANIC.....	1
BLACK, NON-HISPANIC.....	2
WHITE, HISPANIC.....	3
BLACK, HISPANIC.....	4
AMERICAN INDIAN/ALASKA NATIVE.....	5
ASIAN/PACIFIC ISLANDER.....	6
OTHER (SPECIFY)_____	7
REFUSED.....	8
UNKNOWN.....	9

A7. What type of residence are you living in now? (List the appropriate possibilities with codes for your population such as a private home, apartment, condominium, a group residence, a homeless shelter etc.... Codes should include 7 for other, 8 for refused, and 9 for unknown or blank responses.)

A8. How many individuals currently live in your household?

SECTION B: CLINICAL INFORMATION

(The questions in this section relate to symptoms experienced by the case patient. Modify and/or delete as appropriate if the questionnaire is being used to interview a control patient.)

Now I would like to ask you some questions about your illness.

B1. What was the approximate date your symptoms began? --
MM DD YY

B2. Do you currently have these symptoms?

YES.....	1
NO.....	2
REFUSED.....	8
UNKNOWN.....	9

B3. How long have you had these symptoms? (RECORD AS NUMBER OF DAYS. CROSS CHECK THE RESPONSE BY SUBTRACTING THE DATE OF THE INTERVIEW FROM THE DATE OF ONSET OF SYMPTOMS.)

B4. Have you had any of the following symptoms? (READ AND CIRCLE ALL THAT APPLY. CLARIFY THAT THE DEFINITION FOR DIARRHEA IS THREE OR MORE LOOSE OR WATERY STOOLS IN A 24-HOUR PERIOD.)

Diarrhea.....	01
Nausea.....	02
Vomiting.....	03
Fever.....	04
Loss of weight or appetite.....	05
Cramping.....	06
Gas.....	07

Headache..... 08
 Other (SPECIFY)_____ 77
 REFUSED..... 88
 UNKNOWN..... 99
 NO SYMPTOMS..... 00 (GO TO B12)

B5. Have you consulted a health care provider for your symptoms?

YES..... 1
 NO..... 2 (GO TO B8)
 REFUSED..... 8 (GO TO B8)
 UNKNOWN..... 9 (GO TO B8)

B6. What was his or her name, address, and telephone number?

B7. What was the diagnosis? (RECORD THE RESPONDENT'S ANSWER VERBATIM AND CODE LATER.) _____

B8. Has any laboratory work been done, such as a blood test and/or a stool examination?

YES..... 1
 NO..... 2 (GO TO B10)
 REFUSED..... 8 (GO TO B10)
 UNKNOWN..... 9 (GO TO B10)

B9. What were the results of the test(s)? (RECORD THE RESPONDENT'S ANSWER VERBATIM, AND VERIFY WITH THE LAB AND CODE LATER.)

BLOOD _____
 STOOL _____

B10. Were you hospitalized as a result of your symptoms?

YES..... 1
 NO..... 2 (GO TO B12)
 REFUSED..... 8 (GO TO B12)
 UNKNOWN..... 9 (GO TO B12)

B11. How many days were you hospitalized?

B12. Do you have a weakened immune system? In other words, are you HIV positive, receiving cancer chemotherapy, or an organ transplant recipient?

YES..... 1
 NO..... 2
 REFUSED..... 8
 UNKNOWN..... 9

B13. Had you regularly been taking any medication before your symptoms began?

YES..... 1
 NO..... 2 (GO TO LINE BEFORE B15)
 REFUSED..... 8 (GO TO LINE BEFORE B15)
 UNKNOWN..... 9 (GO TO LINE BEFORE B15)

B14. Tell me the name of this (these) medications. (RECORD THE RESPONDENT'S ANSWER VERBATIM AND CODE LATER.)

_____ _____
 _____ _____

IF RESPONDENT LIVES ALONE, GO TO SECTION C.

B15. Are other members of your household ill with similar symptoms?

- YES..... 1
 NO..... 2 (GO TO SECTION C)
 REFUSED..... 8 (GO TO SECTION C)
 UNKNOWN..... 9 (GO TO SECTION C)

B16. How many members are ill? (CODE 88 FOR REFUSAL, 99 FOR UNKNOWN.)

B17. What is his (her, their) relationship to you, and his (her, their) age and gender?

- RELATION AGE GENDER (M=1, F=2)
 RELATION AGE GENDER (M=1, F=2)
 RELATION AGE GENDER (M=1, F=2)

SECTION C: EXPOSURE INFORMATION

(Questions in this section should be added, deleted, and/or tailored to the specific situation being investigated, and to whether the respondent is a case or control patient. The time of reference should be between 2 and 4 weeks before the onset of the illness.)

I would like to move on to some questions about how you might have acquired your illness. First, I would like to concentrate on your exposure to water during the 2 weeks before you became ill. (EMPHASIZE THE TIME FRAME OF INTEREST.)

C1. What were your sources of drinking water at home? (READ AND CIRCLE ALL THAT APPLY.)

- Municipal water from the tap..... 1 (GO TO C4)
 Municipal water processed with a home filter.... 2
 Well water..... 3 (GO TO C4)
 Commercially bottled water..... 4 (GO TO C4)
 (SPECIFY NAME) _____
 Other (SPECIFY) _____ 7 (GO TO C4)
 REFUSED..... 8 (GO TO C4)
 UNKNOWN..... 9 (GO TO C4)

C2. Which brand(s) and model(s) of water filter have you been using? (CODE 8 FOR REFUSED AND 9 FOR UNKNOWN.)

Brand(s) _____

Model(s) _____

C3. When was the last time you changed the filter element? (CODE 8 FOR REFUSED AND 9 FOR UNKNOWN, E.G. 99-99.) -

MM YY

C4. What were your sources of drinking water at school or at work? (READ AND CIRCLE ALL THAT APPLY.)

- Municipal water from the tap..... 01
 Municipal tap water with more filtration at work..... 02
 Municipal tap water filtered at home and taken to work... 03
 Well water..... 04
 Commercially bottled water..... 05
 (SPECIFY NAME) _____
 Other (SPECIFY) _____ 77

REFUSED..... 88
 UNKNOWN..... 99
 DOES NOT GO TO SCHOOL OR WORK..... 00

- C5. Before you became ill, on average, how many glasses of water did you drink in a day? (RECORD THE NUMBER FOR HOME AND SCHOOL/WORK CONSUMPTION SEPARATELY. FILL IN 8s FOR REFUSED, 9s FOR UNKNOWN, AND 0s FOR NOT APPLICABLE.)

 HOME SCHOOL/WORK

- C6. What was your usual source of ice during the 2 weeks before you became ill? (READ AND CIRCLE ALL THAT APPLY.)

Tap water from your home..... 1
 Tap water from your school/work..... 2
 Commercially bought ice..... 3
 (SPECIFY BRAND AND LOCATION)

Does not use ice..... 4
 Other (SPECIFY) _____ 7
 REFUSED..... 8
 UNKNOWN..... 9

- C7. During the 2 weeks before you became ill, did you drink any beverage made with water, such as ice-tea or lemonade, at a restaurant, picnic, fair, or other social event?

YES..... 1
 NO..... 2 (GO TO C9)
 REFUSED..... 8 (GO TO C9)
 UNKNOWN..... 9 (GO TO C9)

- C8. What was the name, date, and location of the event(s)?

NAME _____

LOCATION _____

DATE --
 MM DD YY

(Duplicate this information for each restaurant and/or event.)

- C9. During the 2 weeks before you became ill, did you swim in a pool, lake or river?

YES..... 1
 NO..... 2 (GO TO C15)
 REFUSED..... 8 (GO TO C15)
 UNKNOWN..... 9 (GO TO C15)

- C10. Where did you swim?

BODY OF WATER _____

LOCATION _____

- C11. Do you remember if you put your face in the water?

YES..... 1
 NO..... 2 (GO TO C15)
 REFUSED..... 8 (GO TO C15)
 UNKNOWN..... 9 (GO TO C15)

C12. Did you get any of the water in your mouth?

- YES..... 1
 NO..... 2 (GO TO C15)
 REFUSED..... 8 (GO TO C15)
 UNKNOWN..... 9 (GO TO C15)

C13. Do you remember accidentally swallowing any of the water?

- YES..... 1
 NO..... 2 (GO TO C15)
 REFUSED..... 8 (GO TO C15)
 UNKNOWN..... 9 (GO TO C15)

C14. Please estimate how much water you swallowed. (READ.)

- A mouthful..... 1
 Several mouthfuls..... 2
 The equivalent of a glass..... 3
 REFUSED..... 8
 UNKNOWN..... 9

C15. During the 2 weeks before you became ill, did you bathe in a hot tub or jacuzzi?

- YES..... 1
 NO..... 2 (GO TO INTRO BEFORE C17)
 REFUSED..... 8 (GO TO INTRO BEFORE C17)
 UNKNOWN..... 9 (GO TO INTRO BEFORE C17)

C16. Where did you bathe in this hot tub or jacuzzi?

LOCATION _____

Now I would like to concentrate on your exposure to food during the 2 weeks before you became ill.
 (EMPHASIZE THE TIME FRAME OF INTEREST AGAIN.)

C17. During an average week, how many meals did you eat outside your home, including breakfast, lunch, and dinner, and any take out food ordered and brought home? (CODE 00 FOR NONE, 88 FOR REFUSED, AND 99 FOR UNKNOWN. IF NONE, THEN GO TO C19.)

NUMBER OF MEALS

C18. How is food served at these restaurants? (READ AND CIRCLE ALL THAT APPLY.)

- Take-out or Drive-thru..... 01
 Buffet or Salad Bar..... 02
 Sit-down restaurant..... 03
 Other (SPECIFY) _____ 77
 REFUSED..... 88
 UNKNOWN..... 99

C19. During the 2 weeks before you became ill, how many times did you eat the following food items?
 (CODE 0 FOR NONE, 8 FOR REFUSED, AND 9 FOR UNKNOWN.)

- Lettuce or garden salad.....
 Other cold salads such as coleslaw, potato salad, or pasta salad...
 Cold cuts, chicken salad, egg salad, or tuna salad.....
 Raw vegetables such as carrots, tomatoes, and cucumbers.....
 Raw fruits such as strawberries and raspberries.....

C20. During the 2 weeks before you became ill, did you drink unpasteurized milk, unpasteurized apple juice, and/or eat any unpasteurized products?

YES..... 1
 NO..... 2 (GO TO C22)
 REFUSED..... 8 (GO TO C22)
 UNKNOWN..... 9 (GO TO C22)

C21. What unpasteurized product(s) did you eat?

_____	<input type="text"/>
A SPECIFY	CODE
_____	<input type="text"/>
B	
_____	<input type="text"/>
C	
_____	<input type="text"/>
D	

C22. During the 2 weeks before you became ill, did you begin eating any new health foods or begin using any new dietary supplements?

YES..... 1
 NO..... 2 (GO TO C24)
 REFUSED..... 8 (GO TO C24)
 UNKNOWN..... 9 (GO TO C24)

C23. What were these new products?

_____	<input type="text"/>
A SPECIFY	CODE
_____	<input type="text"/>
B	
_____	<input type="text"/>
C	
_____	<input type="text"/>
D	

C24. During the two weeks before you became ill, did you use any nontraditional or alternative treatments or therapies?

YES..... 1
 NO..... 2 (GO TO C26)
 REFUSED..... 8 (GO TO C26)
 UNKNOWN..... 9 (GO TO C26)

C25. What product(s) did you use?

_____	<input type="text"/>
A SPECIFY	CODE
_____	<input type="text"/>
B	
_____	<input type="text"/>
C	
_____	<input type="text"/>
D	

C26. Before you became ill, where did you do most of your grocery shopping? (READ AND CIRCLE ALL THAT APPLY.)

(List and code groceries found in the location being investigated. If there are specialty markets or stores, make sure to collect information on what products were bought at each store.)

C27. During the 2 weeks before you became ill, did you go to any of the following bars, clubs, and/or discos?
(READ AND CIRCLE ALL THAT APPLY.)

(List clubs, bars etc...found in the location being investigated and code.)

C28. During the 2 weeks before you became ill, did you attend any parties, weddings, receptions, banquets, or other events?

YES..... 1
NO..... 2 (GO TO INTRO BEFORE C30)
REFUSED..... 8 (GO TO INTRO BEFORE C30)
UNKNOWN..... 9 (GO TO INTRO BEFORE C30)

C29. What event(s) did you attend? (RECORD THE TYPE, THE LOCATION, AND THE DATE OF THE EVENT(S).)

EVENT _____ []

LOCATION _____ [][]-[][][]-[][][]
MM DD YY

(Duplicate this information for each event.)

I would now like to ask you a few questions about your travel history.

C30. During the 2 weeks before you became ill, did you travel within the state?

YES..... 1
NO..... 2 (GO TO C32)
REFUSED..... 8 (GO TO C32)
UNKNOWN..... 9 (GO TO C32)

C31. Please give me the locations and the number of days you spent at each location.

A	LOCATION	CODE	DAYS
	_____	[][]	[][]
B	_____	[][]	[][]
C	_____	[][]	[][]
D	_____	[][]	[][]

C32. During the 2 weeks before you became ill, did you travel to another state within the United States?

YES..... 1
NO..... 2 (GO TO C34)
REFUSED..... 8 (GO TO C34)
UNKNOWN..... 9 (GO TO C34)

C33. Please give me the name of the cities and states, and the number of days you spent in each state.

A	CITY/STATE	CODE	DAYS
	_____	[][]	[][]
B	_____	[][]	[][]
C	_____	[][]	[][]
D	_____	[][]	[][]

C34. During the 2 weeks before you became ill, did you travel to another country?

- YES..... 1
 NO..... 2 (GO TO INTRO BEFORE C36)
 REFUSED..... 8 (GO TO INTRO BEFORE C36)
 UNKNOWN..... 9 (GO TO INTRO BEFORE C36)

C35. Please tell me which country (ies) and the number of days you spent in each country.

A	COUNTRY	CODE	DAYS
_____		<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
B	_____	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
C	_____	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
D	_____	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

Next, I would like to ask you some questions about person to person and person to animal exposures.

C36. During the 2 weeks before you became ill, did you work or go to school outside of your home?

- YES..... 1
 NO..... 2
 REFUSED..... 8
 UNKNOWN..... 9

C37. During the 2 weeks before you became ill, were you involved in any of the following types of activities? (READ AND CIRCLE ALL THAT APPLY.)

- Food handling..... 1 (GO TO C38)
 Child care..... 2 (GO TO C39)
 Animal care outside of household 3 (GO TO C40)
 Patient care..... 4 (GO TO C41)
 Other (SPECIFY)_____ 7 (GO TO C42)
 REFUSED..... 8 (GO TO C42)
 UNKNOWN..... 9 (GO TO C42)

C38. What type of food handling or preparation were you involved with? (READ AND CIRCLE ALL THAT APPLY.)

- Hot food preparation..... 1
 Cold food preparation..... 2
 As server or waiter..... 3
 As bartender..... 4
 As salad bar/buffet organizer..... 5
 Other (SPECIFY)_____ 7
 REFUSED..... 8
 UNKNOWN..... 9

C39. What type of child care work were you involved in? (READ AND CIRCLE ALL THAT APPLY.)

- Out of home child care center..... 1
 (SPECIFY NAME)_____ 2
 In-home child care center..... 2
 Out of home babysitter..... 3
 In-home babysitter..... 4
 Other (SPECIFY)_____ 7
 REFUSED..... 8
 UNKNOWN..... 9

- C40. What type of animal care were you involved in? (READ AND CIRCLE ALL THAT APPLY.)
- | | |
|---------------------------|---|
| Work in a pet store..... | 1 |
| Work on a farm..... | 2 |
| Work on a dairy farm..... | 3 |
| Dog walker..... | 4 |
| Dog groomer..... | 5 |
| Veterinarian..... | 6 |
| Other (SPECIFY)_____ | 7 |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |

- C41. What type of patient care were you involved in? (READ AND CIRCLE ALL THAT APPLY.)
- | | |
|------------------------------|---|
| Physician..... | 1 |
| Nurse..... | 2 |
| Nurse's aid..... | 3 |
| Home health care worker..... | 4 |
| Other (SPECIFY)_____ | 7 |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |

- C42. Do you have children in out of home child care?
- | | |
|--------------|---------------------------|
| YES..... | 1 |
| NO..... | 2 (GO TO LINE BEFORE C44) |
| REFUSED..... | 8 (GO TO LINE BEFORE C44) |
| UNKNOWN..... | 9 (GO TO LINE BEFORE C44) |

- C43. Where is the out of home child care located?
NAME/ADDRESS _____

IF THE CASE PATIENT IS 5 YEARS OLD OR LESS, ASK QUESTION C44. OTHERWISE GO TO QUESTION C46.

- C44. Does the child who is ill attend a child care center?
- | | |
|--------------|---------------|
| YES..... | 1 |
| NO..... | 2 (GO TO C46) |
| REFUSED..... | 8 (GO TO C46) |
| UNKNOWN..... | 9 (GO TO C46) |

- C45. Where is the child care center located?
NAME/ADDRESS _____

- C46. During the 2 weeks before you became ill, did you come in contact with anyone who had diarrhea, including (READ AND CIRCLE ALL THAT APPLY.)
- | | |
|--------------------------|---|
| Teenagers or adults..... | 1 |
| (SPECIFY)_____ | |
| Children..... | 2 |
| (SPECIFY)_____ | |
| Animals..... | 3 |
| (SPECIFY)_____ | |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |

- C47. During the 2 weeks before you became ill, did you visit a person who was ill with an intestinal problem, e.g., diarrhea, nausea, or vomiting?
- | | |
|--------------|---------------|
| YES..... | 1 |
| NO..... | 2 (GO TO C49) |
| REFUSED..... | 8 (GO TO C49) |
| UNKNOWN..... | 9 (GO TO C49) |
- C48. Where did you visit this person? (READ.)
- | | |
|------------------------|---|
| In a hospital..... | 1 |
| In a nursing home..... | 2 |
| In a hospice..... | 3 |
| At their home..... | 4 |
| Other location..... | 7 |
| (SPECIFY)_____ | |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |
- C49. During the 2 weeks before you became ill, did you visit anyone in a hospital, nursing home, and/or hospice?
- | | |
|--------------|---------------|
| YES..... | 1 |
| NO..... | 2 (GO TO C52) |
| REFUSED..... | 8 (GO TO C52) |
| UNKNOWN..... | 9 (GO TO C52) |
- C50. What is this person's relationship to you, and his or her age and gender?
- RELATION _____ |__|__| AGE |__|__| GENDER (M=1, F=2) |__|
- C51. Where was this person located?
- LOCATION _____ |__|
- C52. During the 2 weeks before you became ill, did you come in contact with children in diapers?
- | | |
|----------------|---|
| YES..... | 1 |
| (SPECIFY)_____ | |
| NO..... | 2 |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |
- C53. During the 2 weeks before you became ill, did you come in contact with young animals, that is animals who are less than 6 months of age?
- | | |
|--------------|----------------------------|
| YES..... | 1 |
| NO..... | 2 (GO TO INTRO BEFORE C56) |
| REFUSED..... | 8 (GO TO INTRO BEFORE C56) |
| UNKNOWN..... | 9 (GO TO INTRO BEFORE C56) |
- C54. How did you come in contact with these young animals? For example, were they (READ AND CIRCLE ALL THAT APPLY.)
- | | |
|-------------------------------|---|
| Pets in a house..... | 1 |
| Animals on a farm..... | 2 |
| Animals in a petting zoo..... | 3 |
| Other (SPECIFY)_____ | 7 |
| REFUSED..... | 8 |
| UNKNOWN..... | 9 |

C55. What types of young animals did you come in contact with? (*List appropriate animals for this investigation or leave open ended as needed.*)

Finally, I would like to ask you a few questions about possible sexual exposures. Some of these questions may be very personal. I would like to remind you that you may refuse to answer any question at any time.

(Design questions C56 and on to collect information on sexual practices that could involve oral exposure to fecal matter.)

I would like to thank you very much for your time and cooperation in answering my questions.

END OF QUESTIONNAIRE

State Contacts for Assistance with Waterborne Disease Outbreaks

State	Agency	Telephone Normal Office Hours	Emergency Telephone For After Normal Office Hours, Weekends, or Holidays	Contacts
AK	Division of Public Health Dept. of Environmental Conservation	(907) 269-8000 (907) 269-7644	(800) 478-0084	Ask for Elizabeth Funk Ask for Janice Adair
AL	Dept. of Public Health	(334) 613-5200		General number. The name of a specific contact was not available at the time of publication.
AR	Dept. of Health Dept. of Health	(501) 661-2573 (501) 661-2623	(501) 661-2136 (501) 661-2136	Ask for William Teer (recreational and private wells) Ask for Harold Seifert (coordinate with water officials)
AS	Dept. of Health Services	684-633-4606		General number. The name of a specific contact was not available at the time of publication.
AZ	Dept. of Health Services Dept. of Environmental Quality	(602) 230-5820 (602) 207-4619	(602) 230-5820 (800) 234-5677	State Epidemiologist
CA	Dept. of Health Services	(916) 322-2308	(916) 328-3605	Ask for David Spath
CO	Dept. of Public Health and Environment Division of Water Quality	(303) 692-2000	(303) 756-4455	Ask for Patti Shwayder, Executive Director or Tom Looby, Director Holm, Director or Jerry Biberstine, Director of Drinking Water Section
CT	Dept. of Health	(860) 509-7333	(860) 509-8000	Ask for Gerald Iwan
DC	Office of Emergency Preparedness	(202) 673-7644	(202) 673-7644	
DE	Dept. of Health and Social Services	(302) 739-5410	(302) 335-4415	Ask for Ed Hallock
FL	Dept. of Health, Division of Environmental Health, Bureau of Environmental Health Programs	(904) 487-0004	(904) 487-0864	Ask for Ed Bettinger
FM	Dept. of Human Resources	691- 320-2619		General number. The name of a specific contact was not available at the time of publication.

State Contacts (continued)

GA	Dept. of Human Resources	(404) 657-2588	404-657-6534	Ask for Kathleen Toomey or Jim Drinnon
GM	Guam Environmental Protection Agency Guam Waterworks Authority Dept. of Public Health and Social Services	671-475-1638 671-632-9697 671-735-7205		
HI	Dept. of Health	(808) 586-4586	(808) 247-2191	Ask for Epidemiology Specialist on call
IA	Dept. of Public Health	(800) 362-2736	(515) 281-3561	Center for Acute Disease Epidemiology
ID	Dept. of Health and Welfare	(208) 334-5945		General number. The name of a specific contact was not available at the time of publication.
IL	Division of Public Water Supplies, IL EPA Division of Environmental Health, IL DPH	(217) 785-8653 (217) 782-5830	(800) 782-7860 (800) 782-7860	Ask for Roger Selburg for community water supplies Ask for Clinton Mudgett for all other water supplies
IN	Dept. of Environmental Management Dept. of Health	(800) 451-6027 (317) 233-7665	(317) 383-6144	
KS	Dept. of Health and Environment	(913) 296-0201	(913) 357-5683	Ask for Tim Monroe, Office of Epidemiologic Services
KY	Dept. for Public Health Dept. of Environmental Protection Dept. for Public Health (environmental health)	(502) 564-3261 (502) 564-3410 (502) 564-7398	(502) 223-4607	Ask for Clarkson Palmer Ask for Peggy Ryker Ask for David Nichols
LA	Office of Public Health Office of Public Health	(504) 568-5005 (504) 568-5996	(504) 488-7517 (504) 392-0887	Ask for Louise McFarland Ask for Mason Seals
MA	Dept. of Environmental Protection Dept. of Public Health	(617) 292-5500 (617) 983-6800	(617) 522-3700	
MD	Dept. of Health and Mental Hygiene Dept. of the Environment	(410) 767-6671 (410) 631-3588	(410) 795-2100 (800) 633-6101	Ask for Diane Dwyer or Epidemiology after hours Ask for Saeid Kasrael or Public Water Program after hours
ME	Maine Drinking Water Program	(207) 287-5674	(207) 821-0973	Ask for Paul Kempf; after hours, enter PIN #3563
MH	Majuro Hospital	692-625-3355/3399		General number. The name of a specific contact was not available at the time of publication.
MI	Dept. of Community Health	(517) 335-8024		General number. The name of a specific contact was not available at the time of publication.

State Contacts (continued)

MN	Dept. of Health	(612) 623-5414	(612) 623-5414	
MO	Dept. of Health	(573) 751-6113	(573) 893-7457	Ask for Caryl Collier
MP	Dept. of Public Health	670-234-8950		General number. The name of a specific contact was not available at the time of publication.
MS	Dept. of Health	(601) 960-7634		General number. The name of a specific contact was not available at the time of publication.
MT	Dept. of Public Health and Human Services	(406) 444-3986	(406) 444-4740	Ask for Todd Damrow
NC	Public Water Supply Section Div. of Epidemiology, Dept. of Environment	(919) 733-3232 (919) 733-3419	(919) 733-3419	Call for water supply problems Provides T/A to the Public Water Supply Section
ND	Resources for Water Quality Crisis	(701) 328-5211	(701) 328-2121	Ask for Rex Kern, Municipal Facilities
NE	Dept. of Health	(402) 471-0510	(402) 826-5550	Ask for Jack Daniels
NH	Dept. of Health and Human Services	(603) 271-4496	(603) 271-5300	Ask for Bureau of Disease Prevention and Control
NJ	Dept. of Environmental Protection Dept. of Health and Senior Services	(609) 292-5550 (609) 984-2193	(609) 292-7172 (609) 392-2020	Bureau of Safe Drinking Water Ask for Perry Cohen or Faye Sorhage (609-588-3121)
NM	Dept. of Health	(505) 827-0006	(505) 827-0006	Ask for epidemiologist on call
NV	Health Division	(702) 687-4750	(702) 687-4757	Ask for Richard Reighley or David Hunt
NY	Dept. of Health	(518) 458-6731	(518) 465-9720	Ask for Mike Burke, Center for Environmental Health
OH	Dept. of Health	(614) 466-2253		General number. The name of a specific contact was not available at the time of publication.
OK	Dept. of Health Dept. of Environmental Quality	(405) 271-3266 (405) 271-8062	(405) 630-3870 (800) 522-0206	Ask for Mike Crutcher, State Epidemiologist Ask for Larry Gales
OR	Health Division	(503) 731-4024	(503) 731-4030	
PA	Dept. of Environmental Protection	(717) 787-5027	(717) 787-4343	
PL	Palau Environmental Quality Protection Board	680-488-3600	680-488-1723	

State Contacts (continued)

PR	Dept. of Health	(787) 274-7602	(787) 782-3141	Ask for Carmen Desada
RI	Dept. of Health	(401) 277-2577	(401) 272-5952	
SC	Dept. of Health and Environment	(803) 737-4165	(803) 690-3756	Ask for Jerry Gibson or after hours, page consultant on call
SD	Dept. of Health	(605) 773-3754	(605) 224-8572	Ask for Garland Erbele
TN	Dept. of Health	(615) 532-8482	(615) 776-2028	Ask for Robert Taylor
TX	Natural Resource Conservation Commission	(512) 239-6020	(800) 832-8224	Ask for Steve Walden or Antony Bennett
UT	Dept. of Environmental Quality (Water)	(801) 536-4200	(801) 536-4123	
VA	Dept. of Health	(804) 371-2885	(804) 674-2400	Ask for Allen Hammer
VI	Dept. of Health	(809) 774-0117		General number. The name of a specific contact was not available at the time of publication.
VT	Dept. of Health	(802) 863-7240	(802) 863-6299	Ask for Susan Schoenfeld or epidemiologist on call
WA	Dept. of Health	(206) 361-2914	(206) 361-2914	Ask for John Kobayashi
WI	Division of Health Dept. of Natural Resources Public Water Section	(608) 267-9003 (608) 267-7651 (608) 266-2291	(608) 238-5064 (608) 233-5064 (608) 271-0362 (608) 238-1357	Jeffery Davis, MD, State Epidemiologist or Mary Proctor, Communicable Disease Epidemiology Unit Robert Krill, Bureau Director Robert Baumeister, Chief
WV	Dept. of Health and Human Resources	(304) 558-5358		Ask for Loretta Haddy or Cathy Slempp
WY	Dept. of Health EPA Region VIII - Denver	(307) 777-5596 (303) 312-6262	(307) 777-6186 (303) 312-6262	Ask for Gayle Miller or Bill Letson Ask for Mary Wu

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Definitions of many of the following terms can be found in “Key Words and Phrases,” on pages 25 through 27 of the Appendix.

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4. Drinking Water and Health – US EPA



 **EPA Drinking Water
and Health**
*What You Need
to Know!*

**What contaminants may be found in drinking water? . . .
Where does drinking water come from? . . . How is
drinking water treated? . . . What if I have special health
needs? . . . What are the health effects of contaminants
in drinking water? . . . Who is responsible for drinking
water quality? . . . What is a violation of a drinking water
standard? . . . How can I help protect drinking water?**



Introduction

The United States has one of the safest water supplies in the world. However, national statistics don't tell you specifically about the quality and safety of the water coming out of your tap. That's because drinking water quality varies from place to place, depending on the condition of the source water from which it is drawn and the treatment it receives.

Now you have a new way to find information about your drinking water, if it comes from a public water supplier (EPA doesn't regulate private wells, but recommends that well owners have their water tested annually). Starting in 1999, every community water supplier must provide an annual report (sometimes called a consumer confidence report) to its customers. The report provides information on your local drinking water quality, including the water's source, the contaminants found in the water, and how consumers can get involved in protecting drinking water. If you have been looking for specific information about your drinking water, this annual report will provide you with the information you need to begin your investigation.

These annual reports will by necessity be short documents. You may want more information, or have more questions. One place you can go is to your water supplier, who is best equipped to answer questions about your specific water supply. This booklet will help you find other sources of information.

*At the end of this booklet there is a postcard with a listing of free publications available from the Environmental Protection Agency about drinking water. To order a publication, please check off the items you would like to receive, and mail the card. For other assistance, please visit <http://www.epa.gov/safewater/> or contact the Safe Drinking Water Hotline at **1-800-426-4791**.*



What contaminants may be found in drinking water?

There is no such thing as naturally pure water. In nature, all water contains some impurities. As water flows in streams, sits in lakes, and filters through layers of soil and rock in the ground, it dissolves or absorbs the substances that it touches. Some of these substances are harmless. In fact, some people prefer mineral water precisely because minerals give it an appealing taste. However, at certain levels, minerals, just like man-made chemicals, are considered contaminants that can make water unpalatable or even unsafe.

Some contaminants come from erosion of natural rock formations. Other contaminants are substances discharged from factories, applied to farmlands, or used by consumers in their homes and yards. Sources of contaminants might be in your neighborhood or might be many miles away. Your local water quality report tells which contaminants are in your drinking water, the levels at which they were found, and the actual or likely source of each contaminant.

Some ground water systems have established wellhead protection programs to prevent substances from contaminating their wells. Similarly, some surface water systems protect the watershed around their reservoir to prevent contamination. Right now, states and water suppliers are working systematically to assess every source of drinking water and to identify potential sources of contaminants. This process will help communities to protect their drinking water supplies from contamination, and a summary of the results will be in future water quality reports.



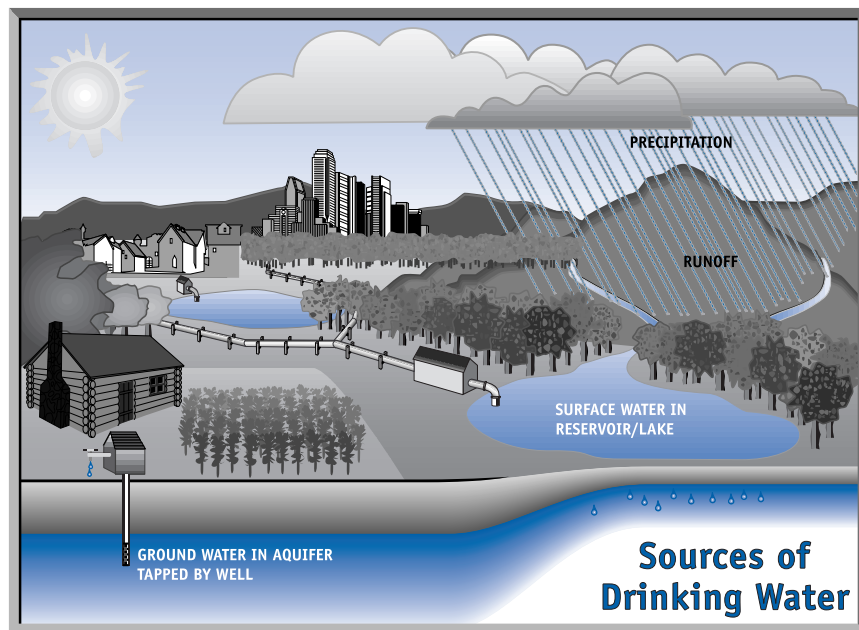
Where does drinking water come from?

A clean, constant supply of drinking water is essential to every community. People in large cities frequently drink water that comes from surface water sources, such as lakes, rivers, and reservoirs. Sometimes these sources are close to the community. Other times, drinking water

suppliers get their water from sources many miles away. In either case, when you think about where your drinking water comes from, it's important to consider not just the part of the river or lake that you can see, but the entire watershed. The watershed is the land area over which water flows into the river, lake, or reservoir.

In rural areas, people are more likely to drink ground water that was pumped from a well. These wells tap into aquifers—the natural reservoirs under the earth's surface—that may be only a few miles wide, or may span the borders of many states. As with surface water, it is important to remember that activities many miles away from you may affect the quality of ground water.

Your annual drinking water quality report will tell you where your water supplier gets your water.



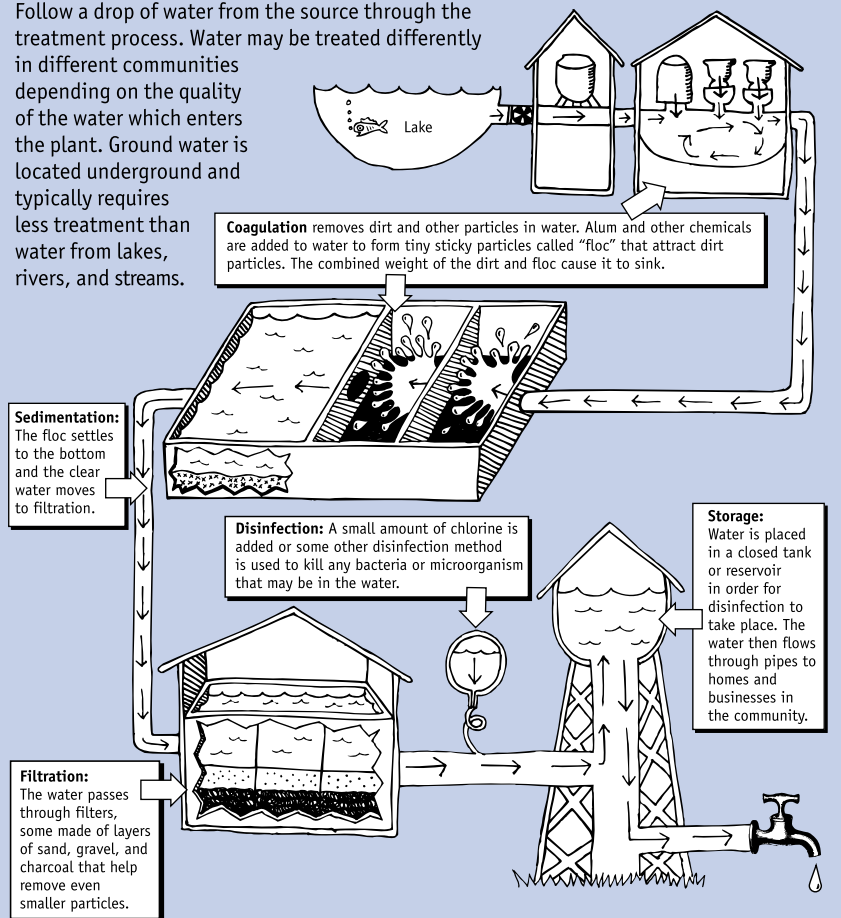


How is drinking water treated?

When a water supplier takes untreated water from a river or reservoir, the water often contains dirt and tiny pieces of leaves and other organic matter, as well as trace amounts of certain contaminants. When it gets to the treatment plant, water suppliers often add chemicals called coagulants to the water. These act on the water as it flows very slowly through tanks so that the dirt and other contaminants form clumps that settle to the bottom. Usually, this water then flows through a filter for removal of the smallest contaminants like viruses and *Giardia*.

Blue Thumb Water Treatment Plant

Follow a drop of water from the source through the treatment process. Water may be treated differently in different communities depending on the quality of the water which enters the plant. Ground water is located underground and typically requires less treatment than water from lakes, rivers, and streams.



Most ground water is naturally filtered as it passes through layers of the earth into underground reservoirs known as aquifers. Water that suppliers pump from wells generally contains less organic material than surface water and may not need to go through any or all of the treatments described in the previous paragraph. The quality of the water will depend on local conditions.

The most common drinking water treatment, considered by many to be one of the most important scientific advances of the 20th century, is disinfection. Most water suppliers add chlorine or another disinfectant to kill bacteria and other germs.

Water suppliers use other treatments as needed, according to the quality of their source water. For example, systems whose water is contaminated with organic chemicals can treat their water with activated carbon, which adsorbs or attracts the chemicals dissolved in the water.



What if I have special health needs?

People who have HIV/AIDS, are undergoing chemotherapy, take steroids, or for another reason have a weakened immune system may be more susceptible to microbial contaminants, including *Cryptosporidium*, in drinking water. If you or someone you know fall into one of these categories, talk to your health care provider to find out if you need to take special precautions, such as boiling your water.

Young children are particularly susceptible to the effects of high levels of certain contaminants, including nitrate and lead. To avoid exposure to lead, use water from the cold tap for making baby formula, drinking, and cooking, and let the water run for a minute or more if the water hasn't been turned on for six or more hours. If your water supplier alerts you that your water does not meet EPA's standard for nitrates and you have children less than six months old, consult your health care provider. You may want to find an alternate source of water that contains lower levels of nitrates for your child.



What are the health effects of contaminants in drinking water?

EPA has set standards for more than 80 contaminants that may occur in drinking water and pose a risk to human health. EPA sets these standards to protect the health of everybody, including vulnerable groups like children. The contaminants fall into two groups according to the health effects that they cause. Your local water supplier will alert you through the local media, direct mail, or other means if there is a potential acute or chronic health effect from compounds in the drinking water. You may want to contact them for additional information specific to your area.

Acute effects occur within hours or days of the time that a person consumes a contaminant. People can suffer acute health effects from almost any contaminant if they are exposed to extraordinarily high levels (as in the case of a spill). In drinking water, microbes, such as bacteria and viruses, are the contaminants with the greatest chance of reaching levels high enough to cause acute health effects. Most people's bodies can fight off these microbial contaminants the way they fight off germs, and these acute contaminants typically don't have permanent effects. Nonetheless, when high enough levels occur, they can make people ill, and can be dangerous or deadly for a person whose immune system is already weak due to HIV/AIDS, chemotherapy, steroid use, or another reason.

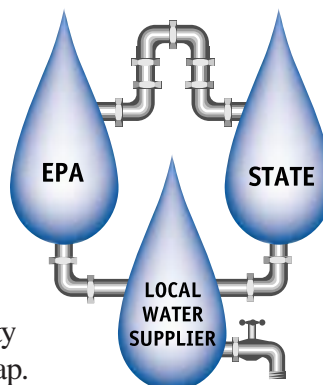
Chronic effects occur after people consume a contaminant at levels over EPA's safety standards for many years. The drinking water contaminants that can have chronic effects are chemicals (such as disinfection by-products, solvents, and pesticides), radionuclides (such as radium), and minerals (such as arsenic). Examples of these chronic effects include cancer, liver or kidney problems, or reproductive difficulties.



Who is responsible for drinking water quality?

The Safe Drinking Water Act gives the Environmental Protection Agency (EPA) the responsibility for setting national drinking water standards that protect the health of the 250 million people who get their water from public

water systems. Other people get their water from private wells which are not subject to federal regulations. Since 1974, EPA has set national standards for over 80 contaminants that may occur in drinking water.



While EPA and state governments set and enforce standards, local governments and private water suppliers have direct responsibility for the quality of the water that flows to your tap.

Water systems test and treat their water, maintain the distribution systems that deliver water to consumers, and report on their water quality to the state. States and EPA provide technical assistance to water suppliers and can take legal action against systems that fail to provide water that meets state and EPA standards.

What is a violation of a drinking water standard?

Drinking water suppliers are required to monitor and test their water many times, for many things, before sending it to consumers. These tests determine whether and how the water needs to be treated, as well as the effectiveness of the treatment process. If a water system consistently sends to consumers water that contains a contaminant at a level higher than EPA or state health standards or if the system fails to monitor for a contaminant, the system is violating regulations, and is subject to fines and other penalties.

When a water system violates a drinking water regulation, it must notify the people who drink its water about the violation, what it means, and how they should respond. In cases where the water presents an immediate health threat, such as when people need to boil water before drinking it, the system must use television, radio, and newspapers to get the word out as quickly as possible. Other notices may be sent by mail, or delivered with the water bill. Each water suppliers' annual water quality report must include a summary of all the violations that occurred during the previous year.



How can I help protect drinking water?

Using the new information that is now available about drinking water, citizens can both be aware of the challenges of keeping drinking water safe and take an active role in protecting drinking water. There are lots of ways that individuals can get involved. Some people will help clean up the watershed that is the source of their community's water. Other people might get involved in wellhead protection activities to prevent the contamination of the ground water source that provides water to their community. These people will be able to make use of the information that states and water systems are

gathering as they assess their sources of water.



Other people will want to attend public meetings to ensure that the community's need for safe drinking water is considered in making decisions about land use. You may wish to

participate as your state and water system make funding decisions. And all consumers can do their part to conserve water and to dispose properly of household chemicals.

For more information, visit
<http://www.epa.gov/safewater/>



or call the Safe Drinking Water Hotline at
1-800-426-4791



To order a printed copy of any of the following documents:

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- o Office of Ground Water and Drinking Water Publications (810-B-99-001)
- o Water on Tap: A Consumer's Guide to the Nation's Drinking Water (815-K-97-002)
- o It's YOUR Drinking Water: Get to Know it and Protect it!: How the right-to-know provisions of the Safe Drinking Water Act can help you learn about and protect your drinking water. (810-K-99-002)
- o EPA/CDC Guidance for People with Severely Weakened Immune Systems (816-F-99-005)
- o Lead in Your Drinking Water: Actions You Can Take to Reduce Lead in Your Drinking Water (810-F-93-001)
- o America's Drinking Water in 1997 (816-F-99-001)
- o Safe Drinking Water is in Our Hands: poster (815-F-98-008) and booklet (815-F-98-007) that list the contaminants that EPA regulates
- o Getting Involved in Protecting Your Community's Source of Drinking Water (816-F-97-009)
- o Citizen's Guide to Groundwater Protection (440-6-90-004)
- o Citizen Monitoring: Recommendations to Public Water System Users (570-9-90-005)
- o What You Can Do to Keep Your Drinking Water Safe (570-9-90-500)
- o Underground Injection Wells and Your Drinking Water (813-F-94-001)

Drinking water contaminant fact sheets:

- o Inorganic Chemicals [metals & minerals] (811-F-95-002-C)
- o Synthetic Organic Chemicals [pesticides] (811-F-95-003-C)
- o Volatile Organic Chemicals [industrial chemicals & solvents] (811-F-95-004-C)

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c. Reclaimed Water

- 1. California Statutes Related to Reclaimed Water –
CA Department of Public Health Drinking Water
Branch**

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Statutes Related to Recycled Water & the California Department of Public Health

January 2011

On July 1, 2007, the California Department of Public Health (CDPH) was created and took over the duties, powers, purposes, functions, responsibilities, and jurisdiction of the California Department of Health Services, pursuant to Health and Safety Code Section 131051, et seq., which is not included in this compilation of recycled water-related statutes. Updates or inclusions since the January 1, 2009 version are highlighted in yellow. Portions that became effective upon the Governor's approval and Secretary of State's filing, as a result of 2010 legislative action, have also been underlined.

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HEALTH AND SAFETY CODE
DIVISION 6. SANITARY DISTRICTS
Part 1. Sanitary District Act of 1923
Chapter 4. District Powers
Article 1. General

§6512. Authority Pertaining to Water Recycling and Distribution Systems

(a) A district may acquire, plan, construct, reconstruct, alter, enlarge, lay, renew, replace, maintain, and operate garbage dumpsites and garbage collection and disposal systems, sewers, drains, septic tanks, and sewerage collection, outfall, treatment works and other sanitary disposal systems, and storm water drains and storm water collection, outfall and disposal systems, and water recycling and distribution systems, as the board deems necessary and proper, and in the performance of these functions, either in or out of the district, it may join through joint powers agreements pursuant to the provisions of Chapter 5 (commencing with Section 6500) of Division 7 of Title 1 of the Government Code, or through other means with any county or municipality or any other district or governmental agency.

(b) Before any garbage dump is established, the location shall first be approved by the county health officer, and, in addition, if the location is within two miles of any city, the consent of the governing body of the city shall first be secured.

(c)

(1) If the district includes any part of a city, water district, or other local agency that provides water service to any territory in the district, the district shall not supply water service to the territory unless the district first obtains the consent of the city, water district, or other local agency. The consent shall not be revoked, if the revocation will result in a decrease of the revenues available to pay the outstanding bonds of the district.

(2) Paragraph (1) does not apply to the provision of recycled water by a district.

(3)

(A) Subject to subparagraph (B), a district may not supply water service using recycled water to the territory of any part of a city, water district, or other local public entity providing water service, or commence construction of facilities for that service, prior to offering to consult with that city, water district, or other local public entity, and providing notification of availability for consultation. The obligation to consult terminates if that local public entity

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providing water service fails to make itself available for consultation within 60 days of written notification to that local public entity.

(B) The consultation and notification requirements described in subparagraph (A) do not apply to a district if the district, prior to supplying water or commencing construction as described in subparagraph (A), provides notification to the local public entity pursuant to Section 65604 of the Government Code or submits a written request to the local public entity pursuant to subdivision (b) of Section 13580 of the Water Code.

(d) The Department of Water Resources may assist sanitary districts in applying for, and in obtaining approval of, federal and state funding and permits for cost-effective water recycling projects and shall confer and cooperate with the legislative body of the district during the application and approval process.

DIVISION 13. HOUSING

Part 1.5. Regulations of Buildings Used for Human Habitation.

Chapter 5. Administration and Enforcement

Article 3. Actions and Proceedings

§17922.12. Use of Graywater

(a) For the purposes of this section, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

(b) Notwithstanding Chapter 22 (commencing with Section 14875) of Division 7 of the Water Code, at the next triennial building standards rulemaking cycle that commences on or after January 1, 2009, the department shall adopt and submit for approval pursuant to Chapter 4 (commencing with Section 18935) of Part 2.5 building standards for the construction, installation, and alteration of graywater systems for indoor and outdoor uses.

(c) In adopting building standards under this section, the department shall do all of the following:

(1) Convene and consult a stakeholder's group that includes members with expertise in public health, water quality, geology or soils, residential plumbing, home building, and environmental stewardship.

(2) Ensure protection of water quality in accordance with applicable provisions of state and federal water quality law.

(3) Consider existing research available on the environmental consequences to soil and groundwater of short-term and long-term graywater use for irrigation purposes, including, but not limited to, research sponsored by the Water Environment Research Foundation.

(4) Consider graywater use impacts on human health.

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(5) Consider the circumstances under which the use of in-home graywater treatment systems is recommended.

(6) Consider the use and regulation of graywater in other jurisdictions within the United States and in other nations.

(d) The department may revise and update the standards adopted under this section at any time, and the department shall reconsider these standards at the next triennial rulemaking that commences after their adoption.

(e) The approval by the California Building Standards Commission of the standards for graywater systems adopted under this section shall terminate the authority of the Department of Water Resources to adopt and update standards for the installation, construction, and alteration of graywater systems in residential buildings pursuant to Chapter 22 (commencing with Section 14875) of Division 7 of the Water Code.

Part 2.5. State Building Standards

Chapter 4. The California Building Standards Code

§18941.7. Authority for Local Agencies to adopt graywater prohibitions or standards

A city, county, or other local agency may adopt, after a public hearing and enactment of an ordinance or resolution, building standards that prohibit entirely the use of graywater, or building standards that are more restrictive than the graywater building standards adopted by the department under Section 17922.12 and published in the California Building Standards Code.

DIVISION 104. ENVIRONMENTAL HEALTH SERVICES

Part 12. Drinking Water

Chapter 4. California Safe Drinking Water Act

Article 7. Requirements and Compliance

§116551. Augmentation of source with recycled water

The department shall not issue a permit to a public water system or amend a valid existing permit for the use of a reservoir as a source of supply that is directly augmented with recycled water, as defined in subdivision (n) of Section 13050 of the Water Code, unless the department does all of the following:

(a) Performs an engineering evaluation that evaluates the proposed treatment technology and finds that the proposed technology will ensure that the recycled water meets or exceeds all applicable primary and secondary drinking water standards and poses no significant threat to public health.

(b) Hold at least three duly noticed public hearings in the area where the recycled water is proposed to be used or supplied for human consumption to receive public testimony on that proposed use. The department shall make available to the public, not less than 10 days prior to the

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date of the first hearing held pursuant to this subdivision, the evaluations and findings made pursuant to subdivision (a).

Chapter 5. Water Equipment and Control

Article 2. Cross-Connection Control by Water Users

§116800. Control of users

Local health officers may maintain programs for the control of cross-connections by water users, within the users' premises, where public exposure to drinking water contaminated by backflow may occur. The programs may include inspections within water users premises for the purpose of identifying cross-connection hazards and determining appropriate backflow protection. Water users shall comply with all orders, instructions, regulations, and notices from the local health officer with respect to the installation, testing, and maintenance of backflow prevention devices. The local health officer may collect fees from those water users subject to inspection to offset the costs of implementing cross-connection control programs.

§116805. Fees

(a) Local health officers may maintain programs, in cooperation with water suppliers, to protect against backflow through service connections into the public water supply, and, with the consent of the water supplier, may collect fees from the water supplier to offset the costs of implementing these programs.

(b) The fees authorized under this section and under Section 116800 shall be limited to the costs of administering these programs. At the discretion of the water supplier, the fees collected from the water supplier by the local health officer may be passed through to water users.

(c) Programs authorized under this section and Section 116800 shall be conducted in accordance with backflow protection regulations adopted by the department.

(d) Nothing in this article shall prevent a water supplier from directly charging those water users required to install backflow prevention devices for the costs of the programs authorized in this section and Section 116800.

§116810. Certification of device testers

To assure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance, local health officers may maintain programs for certification of backflow prevention device testers. The local health officer may suspend, revoke, or refuse to renew the certificate of a tester, if, after a hearing before the local health officer or his or her designee, the local health officer or his or her designee finds that the tester has practiced fraud or deception or has displayed gross negligence or misconduct in the performance of his or her duties as a certified backflow prevention device tester. The local health officer may collect fees from certified testers to offset the cost of the certification program provided pursuant to this section. The certification standards shall be consistent with the backflow protection regulations adopted by the department.

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§116815. Purple pipe for recycled water

(a) All pipes installed above or below the ground, on and after June 1, 1993, that are designed to carry recycled water, shall be colored purple or distinctively wrapped with purple tape.

(b) Subdivision (a) shall apply only in areas served by a water supplier delivering water for municipal and industrial purposes, and in no event shall apply to any of the following:

(1) Municipal or industrial facilities that have established a labeling or marking system for recycled water on their premises, as otherwise required by a local agency, that clearly distinguishes recycled water from potable water.

(2) Water delivered for agricultural use.

(c) For purposes of this section, "recycled water" has the same meaning as defined in subdivision (n) of Section 13050 of the Water Code.

§116820. Violations

Any person who violates any provision of this article, violates any order of the local health officer pursuant to this article, or knowingly files a false statement or report required by the local health officer pursuant to this article is guilty of a misdemeanor punishable by a fine not exceeding five hundred dollars (\$500) or by imprisonment not exceeding 30 days in the county jail or by both such fine and imprisonment. Each day of a violation of any provision of this article or of any order of the local health officer beyond the time stated for compliance of the order shall be a separate offense.

WATER CODE

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES

Part 2.6. Urban Water Management Planning

Chapter 1. General Declaration and Policy

§10610. Urban Water Management Planning Act

This part shall be known and may be cited as the "Urban Water Management Planning Act."

§10610.2. Legislative Findings

(a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

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(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

§10610.4. Legislative Findings

The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Chapter 2. Definitions

§10611. Definitions

Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

§10611.5. Demand management

"Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

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§10612. Customer

"Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

§10613. Efficient use

"Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

§10614. Person

"Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

§10615. Plan

"Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

§10616. Public agency

"Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

§10616.5. Recycled water

"Recycled water" means the reclamation and reuse of wastewater for beneficial use.

§10617. Urban water supplier

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

Chapter 3. Urban Water Management Plans

Article 1. General Provisions

§10620. Requirement for Urban Water Management Plan

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

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(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

§10621. Plan Updates

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

§10630. Legislative intent

It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

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§10631. Requirements for plan

A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c)

(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single dry water year.

(C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

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(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

- (A) Single-family residential.
- (B) Multifamily.
- (C) Commercial.
- (D) Industrial.
- (E) Institutional and governmental.
- (F) Landscape.
- (G) Sales to other agencies.
- (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

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(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency

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shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

§10631.1. Water Use Projections

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

§10631.5. Grants and Loans

(a)

(1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This funding includes, but is not limited to, funds made available pursuant to Section 75026 of the Public Resources Code.

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4)

(A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a

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water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b)

(1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2)

(A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

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(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

§10631.7. Independent Technical Panel

The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

§10632. Water Shortage Contingency

The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

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(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

§10633. Information on recycled water

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

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(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

§10634. Quantity of Sources

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

§10635. Assessment of water reliability

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

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Article 3. Adoption and Implementation of Plans

§10640. Requirements for urban water supplier

Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

§10641. Consultation with agencies

An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

§10642. Encouraging community participation

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

§10643. Implementation

An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

§10644. Submission of plan

(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

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(c)

(1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

§10645. Availability for public review.

Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

Chapter 4. Miscellaneous Provisions

§10650. Commencement of actions

Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

§10651. Extent of actions

In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

§10652. CEQA Exemption

The California Environmental Quality Act (Division 13) (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

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§10653. Adoption of Plan and legal requirements

The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

§10654. Cost recovery.

An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

§10655. Invalidation of any provisions

If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

§10656. Failure to produce a plan

An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

DIVISION 7. WATER QUALITY

Chapter 2. Definitions

§13050. Terms used in this division

As used in this division:

- (a) "State board" means the State Water Resources Control Board.

- (b) "Regional board" means any California regional water quality control board for a region as specified in Section 13200.

- (c) "Person" includes any city, county, district, the state, and the United States, to the extent authorized by federal law.

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(d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(e) "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state.

(f) "Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

(g) "Quality of the water" refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.

(h) "Water quality objectives" means the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

(i) "Water quality control" means the regulation of any activity or factor which may affect the quality of the waters of the state and includes the prevention and correction of water pollution and nuisance.

(j) "Water quality control plan" consists of a designation or establishment for the waters within a specified area of all of the following:

- (1) Beneficial uses to be protected.
- (2) Water quality objectives.
- (3) A program of implementation needed for achieving water quality objectives.

(k) "Contamination" means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(l)

(1) "Pollution" means an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following:

- (A) The waters for beneficial uses.
 - (B) Facilities which serve these beneficial uses.
- (2) "Pollution" may include "contamination."

(m) "Nuisance" means anything which meets all of the following requirements:

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(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

(n) "Recycled water" means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.

(o) "Citizen or domiciliary" of the state includes a foreign corporation having substantial business contacts in the state or which is subject to service of process in this state.

(p)

(1) "Hazardous substance" means either of the following:

(A) For discharge to surface waters, any substance determined to be a hazardous substance pursuant to Section 311(b)(2) of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.).

(B) For discharge to groundwater, any substance listed as a hazardous waste or hazardous material pursuant to Section 25140 of the Health and Safety Code, without regard to whether the substance is intended to be used, reused, or discarded, except that "hazardous substance" does not include any substance excluded from Section 311 (b)(2) of the Federal Water Pollution Control Act because it is within the scope of Section 311(a)(1) of that act.

(2) "Hazardous substance" does not include any of the following:

(A) Nontoxic, nonflammable, and noncorrosive stormwater runoff drained from underground vaults, chambers, or manholes into gutters or storm sewers.

(B) Any pesticide which is applied for agricultural purposes or is applied in accordance with a cooperative agreement authorized by Section 116180 of the Health and Safety Code, and is not discharged accidentally or for purposes of disposal, the application of which is in compliance with all applicable state and federal laws and regulations.

(C) Any discharge to surface water of a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act.

(D) Any discharge to land which results, or probably will result, in a discharge to groundwater if the amount of the discharge to land is less than a reportable quantity, as determined by regulations adopted pursuant to Section 13271, for substances listed as hazardous pursuant to Section 25140 of the Health and Safety Code. No discharge shall be deemed a discharge of a reportable quantity until regulations set a reportable quantity for the substance discharged.

(q)

(1) "Mining waste" means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and processing of ores and minerals. Mining waste includes, but is not

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limited to, soil, waste rock, and overburden, as defined in Section 2732 of the Public Resources Code, and tailings, slag, and other processed waste materials, including cementitious materials that are managed at the cement manufacturing facility where the materials were generated.

(2) For the purposes of this subdivision, "cementitious material" means cement, cement kiln dust, clinker, and clinker dust.

(r) "Master recycling permit" means a permit issued to a supplier or a distributor, or both, of recycled water, that includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements prescribed pursuant to Section 13523.1.

§13051. Injection well

As used in this division, "injection well" means any bored, drilled, or driven shaft, dug pit, or hole in the ground into which waste or fluid is discharged, and any associated subsurface appurtenances, and the depth of which is greater than the circumference of the shaft, pit, or hole.

Chapter 3. State Water Quality Control

Article 4. Other Powers and Duties of the State Board

§13169. Groundwater protection program

(a) The state board is authorized to develop and implement a groundwater protection program as provided under the Safe Drinking Water Act, Section 300 and following of Title 42 of the United States Code, and any federal act that amends or supplements the Safe Drinking Water Act. The authority of the state board under this section includes, but is not limited to, the following:

(1) To apply for and accept state groundwater protection grants from the federal government.

(2) To take any additional action as may be necessary or appropriate to assure that the state's groundwater protection program complies with any federal regulations issued pursuant to the Safe Drinking Water Act or any federal act that amends or supplements the Safe Drinking Water Act.

(b) Nothing in this section is intended to expand the authority of the state board as authorized under the Porter-Cologne Water Quality Control Act (Div. 7 (commencing with Sec. 13000) Wat. C.).

§13176. Laboratory analyses

(a) The analysis of any material required by this division shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.

(b) A person or public entity of the state shall not contract with a laboratory for environmental analyses for which the State Department of Public Health requires accreditation or certification pursuant to this chapter, unless the laboratory holds a valid certification or accreditation.

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Chapter 4. Regional Water Quality Control

Article 4. Waste Discharge Requirements

§13275. Public water system rights

(a) Notwithstanding any other law, a public water system regulated by the State Department of Public Health shall have the same legal rights and remedies against a responsible party, when the water supply used by that public water system is contaminated, as those of a private land owner whose groundwater has been contaminated.

(b) For purposes of this section, "responsible party" has the same meaning as defined in Section 25323.5 of the Health and Safety Code.

Chapter 5. Enforcement and Implementation

Article 1. Administrative Enforcement and Remedies by the Regional Boards

§13304.1. Discharges of treated groundwater – CDPH role (as amended effective January 1, 2011)

(a) A groundwater cleanup system that commences operation on or after January 1, 2002, and that is required to obtain a discharge permit from the regional board pursuant to the regional board's jurisdiction, and that discharges treated groundwater to surface water or groundwater, shall treat the groundwater to standards approved by the regional board, consistent with this division and taking into account the beneficial uses of the receiving water and the location of the discharge and the method by which the discharge takes place.

(b) In making its determination of the applicable water quality standards to be achieved by the operator of a groundwater cleanup system that commences operation on or after January 1, 2002, that draws groundwater from an aquifer that is currently being used, or has been used at any time since 1979 as a source of drinking water supply by the owner or operator of a public water system, and that discharges treated groundwater to surface water or groundwater from which a public water system draws drinking water, the regional board shall consult with the affected groundwater management entity, if any, affected public water systems, and the State Department of Public Health to ensure that the discharge, spreading, or injection of the treated groundwater will not adversely affect the beneficial uses of any groundwater basin or surface water body that is or may be used by a public water system for the provision of drinking water.

Chapter 6. Financial Assistance

Article 1. State Water Quality Control Fund

§13400. Definitions

As used in this chapter, unless otherwise apparent from the context:

(a) "Fund" means the State Water Quality Control Fund.

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(b) "Public agency" means any city, county, city and county, district, or other political subdivision of the state.

(c) "Facilities" means:

- (1) facilities for the collection, treatment, or export of waste when necessary to prevent water pollution,
- (2) facilities to recycle wastewater and to convey recycled water,
- (3) facilities or devices to conserve water, or
- (4) any combination of the foregoing.

§13401. Fund's continuing existence

(a) The State Water Quality Control Fund is continued in existence. The following moneys in the fund are appropriated, without regard to fiscal years, for expenditure by the state board in making loans to public agencies in accordance with this chapter:

- (1) The balance of the original moneys deposited in the fund.
- (2) Any money repaid to the fund.
- (3) Any remaining balance of the money in the fund deposited therein after the specific appropriations for loans to the South Tahoe Public Utility District, the North Tahoe Public Utility District, the Tahoe City Public Utility District, the Truckee Sanitary District, and to any other governmental entity in the areas served by such districts have been made.

(b) Notwithstanding subdivision (a), upon the order of the state board, the money in the State Water Quality Control Fund shall be transferred to the State Water Pollution Control Revolving Fund.

Article 2. Loans to Local Agencies

§13410. Applications

Applications for construction loans under this chapter shall include:

- (a) A description of the proposed facilities.
- (b) A statement of facts showing the necessity for the proposed facilities and showing that funds of the public agency are not available for financing such facilities and that the sale of revenue or general obligation bonds through private financial institutions is impossible or would impose an unreasonable burden on the public agency.
- (c) A proposed plan for repaying the loan.
- (d) Other information as required by the state board.

§13411. DHS consultation

Upon a determination by the state board, after consultation with the State Department of Health, that

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(a) the facilities proposed by an applicant are necessary to the health or welfare of the inhabitants of the state,

(b) that the proposed facilities meet the needs of the applicant,

(c) that funds of the public agency are not available for financing such facilities and that the sale of revenue or general obligation bonds through private financial institutions is impossible or would impose an unreasonable burden on the public agency,

(d) that the proposed plan for repayment is feasible,

(e) in the case of facilities proposed under Section 13400(c)(1) that such facilities are necessary to prevent water pollution,

(f) in the case of facilities proposed under Section 13400(c)(2) that such facilities will produce recycled water and that the public agency has adopted a feasible program for use thereof, and

(g) in the case of facilities proposed under Section 13400(c)(3) that such facilities are a cost effective means of conserving water, the state board, subject to approval by the Director of Finance, may loan to the applicant such sum as it determines is not otherwise available to the public agency to construct the proposed facilities.

§13412. Repayment

No loan shall be made to a public agency unless it executes an agreement with the state board under which it agrees to repay the amount of the loan, with interest, within 25 years at 50 percent of the average interest rate paid by the state on general obligation bonds sold in the calendar year immediately preceding the year in which the loan agreement is executed.

§13413. Construction halted under health department orders

It is the policy of this state that, in making construction loans under this article, the state board should give special consideration to facilities proposed to be constructed by public agencies in areas in which further construction of buildings has been halted by order of the State Department of Health or a local health department, or both, or notice has been given that such an order is being considered; provided, however, that the public agencies designated in this section shall otherwise comply with and meet all requirements of other provisions of this chapter.

§13414. Funding monies repaid

All money received in repayment of loans under this chapter shall be paid to the State Treasurer and credited to the fund.

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§13415. Loans for studies and investigations

(a) Loans may be made by the state board to public agencies to pay not more than one half of the cost of studies and investigations made by such public agencies in connection with waste water reclamation.

(b) Not more than a total of two hundred thousand dollars (\$200,00) shall be loaned pursuant to this section in any fiscal year, and not more than fifty thousand dollars (\$50,000) shall be loaned to any public agency in any fiscal year pursuant to this section. In the event that less than two million dollars (\$2,000,000) is available in any fiscal year for loans under this article, then not more than 10 percent of the available amount shall be available for loans for studies and investigations pursuant to this section.

(c) Applications for such loans shall be made in such form, and shall contain such information, as may be required by the state board.

(d) Such loans shall be repaid within a period not to exceed 10 years, with interest at a rate established in the manner provided in Section 13412.

§13416. Election required to enter into loan contract

Before a public agency may enter into a contract with the state board for a construction loan under this chapter, the public agency shall hold an election on the proposition of whether or not the public agency shall enter into the proposed contract and more than 50 percent of the votes cast at such election must be in favor of such proposition.

§13417. Election procedure

The election shall be held in accordance with the following provisions:

(a) The procedure for holding an election on the incurring of bonded indebtedness by such public agency shall be utilized for an election of the proposed contract as nearly as the same may be applicable. Where the law applicable to such agency does not contain such bond election procedure, the procedure set forth in the Revenue Bond Law of 1941 (Chapter 6 (commencing with Section 54300) Part 1, Division 2, Title 5 of the Government Code), as it may now or hereafter be amended, shall be utilized as nearly as the same may be applicable.

(b) No particular form of ballot is required.

(c) The notice of the election shall include a statement of the time and place of the election, the purpose of the election, the general purpose of the contract, and the maximum amount of money to be borrowed from the state under the contract.

(d) The ballots for the election shall contain a brief statement of the general purpose of the contract substantially as stated in the notice of the election, shall state the maximum amount of money to be borrowed from the state under the contract, and shall contain the words "Execution of contract --Yes" and "Execution of contract--No."

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(e) The election shall be held in the entire public agency except where the public agency proposes to contract with the state board on behalf of a specified portion, or of specified portions of the public agency, in which case the election shall be held in such portion or portions of the public agency only.

§13418. Tahoe moratorium

Notwithstanding any provision of this chapter or any other provision of law, including, but not limited to, the provisions of Chapter 47 and 137 of the Statutes of 1966, First Extraordinary Session, Chapter 1679 of the Statutes of 1967, Chapter 1356 of the Statutes of 1969, and Chapter 920 of the Statutes of 1970, or the provisions of any existing loan contract entered into pursuant to this chapter or any other such provision of law, there shall be a two-year moratorium following the effective date of this section on that portion of the principal and interest payments otherwise required in repayment of funds heretofore loaned to the North Tahoe Public Utility District, the Tahoe City Public Utility District, the South Tahoe Public Utility District, the Truckee Sanitary District, the Squaw Valley County Water District, and the Alpine Springs County Water District pursuant to this chapter or any act of the Legislature authorizing a state loan for the purpose of permitting any such agency to construct necessary sewage and storm drainage facilities to prevent and control water pollution in the area served by such agency, equal in percentage, as determined by the Department of Finance, to the percentage of property tax revenues lost to the agency by reason of the adoption of Article XIII A of the California Constitution, unless moneys are otherwise available for such repayment from state allocations or the sale of bonds authorized on or before July 1, 1978, but unissued. The provisions of this section do not apply to any sums which are required to be repaid immediately or in accordance with an accelerated time schedule pursuant to a duly entered stipulated judgment between the State of California and the Tahoe City Public Utility District. Interest on loans shall accrue during the moratorium period and be repaid by the recipients of the loans, in addition to the normal principal and interest payments.

Article 2.5 Local Bonds

§13425. Applications

Applications for guarantees for local agency bonds under this chapter shall include:

- (a) A description of the proposed facilities.
- (b) A financing plan for the proposed facilities, including the amount of debt and maximum term to maturity of the proposed local agency bond issue and identification of sources of revenue that will be dedicated to payment of principal and interest on the bonds.
- (c) Other information as required by the state board. The state board may provide that the application may be combined with applications for any other source of funds administered by the state board.

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§13426. Consultation with CDPH on determinations

The state board, subject to approval by the Director of Finance, may agree to provide a guarantee pursuant to this article for all or a specified part of the proposed local agency bond issue upon making, after consultation with the State Department of Public Health, all of the following determinations:

(a) The facilities proposed by an applicant are necessary to the health or welfare of the inhabitants of the state and are consistent with water quality control plans adopted by regional boards.

(b) The proposed facilities meet the needs of the applicant.

(c) The proposed bond issue and plan repayment are sound and feasible.

(d) In the case of facilities proposed under paragraph (2) of subdivision (c) of Section 13400, the facilities will produce recycled water and the applicant has adopted a feasible program for the use of the facilities. The state board may adopt criteria for ranking and setting priorities among applicants for those guarantees.

§13427. Agreement by applicant

No guarantee shall be extended to any applicant unless it executes an agreement with the state board under which the applicant agrees to the following provisions:

(a) To proceed expeditiously with, and complete, the proposed project.

(b) To commence operation of the project on completion, and to properly operate and maintain the work in accordance with applicable provisions of law.

(c) To issue bonds and to levy fines, charges, assessments, or taxes to pay the principal of, and interest on, the bonds as described in the application.

(d) To diligently and expeditiously collect those levies, including timely exercise of available legal remedies in the event of delinquency or default.

(e) To act in accordance with such other provisions as the state board may require.

§13428. Clean Water Bond Guarantee Fund

Notwithstanding Section 13340 of the Government Code, the money in the Clean Water Bond Guarantee Fund, which is hereby created, is continuously appropriated to the state board without regard to fiscal years for the purposes of this chapter.

§13429. Investment of money in fund

Money in the Clean Water Bond Guarantee Fund not needed for making payments on guaranteed bonds pursuant to this chapter shall be invested pursuant to law. All proceeds of the investment shall be deposited in that fund to the extent permitted by federal law.

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§13430. Limitation on authorization to guarantee bonds

The state board's authorization to guarantee bonds under this article shall be limited to bonds with a total principal amount of not more than 10 times the amount in the Clean Water Bond Guarantee Fund at the time the state board determines to extend each guarantee pursuant to Section 13426.

§13431. Limitation on amounts paid

Under no circumstances shall the amount paid out as a result of bond guarantees extended pursuant to this article exceed the amount in the Clean Water Bond Guarantee Fund. This article does not express or imply any commitment by the state board or any other agency of the state to pay any money or levy any charge or tax or otherwise exercise its faith and credit on behalf of any local agency or bondholder beyond the funds in the Clean Water Bond Guarantee Fund.

§13432. Annual Fee

The state board may charge an annual fee not to exceed one-tenth of 1 percent of the principal amount of each bond issue that it guarantees for guarantee coverage. The state board may charge a lesser amount. The proceeds of any fee shall be paid into the Clean Water Bond Guarantee Fund.

§13433. Rules and procedures authority

The state board shall, by regulation, prescribe rules and procedures for all of the following:

(a) To pay money from the Clean Water Bond Guarantee Fund to an insured local agency or bondholder in the event that the amount in the local agency's bond reserve fund falls below a minimum amount, or in the event of failure by the local agency to pay the principal of, or interest on, an insured bond issue on time, as the state board may require.

(b) To require, by court action if necessary, a local agency to raise sewer service charges, levy additional assessments, collect charges or assessments, or foreclose or otherwise sell property as needed to prevent a reduction in the local agency's bond reserve fund, or to prevent default, or to collect funds to repay to the fund any payments made pursuant to subdivision (a).

Article 3. State Water Pollution Cleanup and Abatement Account

§13440. Fund established

There is in the State Water Quality Control Fund the State Water Pollution Cleanup and Abatement Account (hereinafter called the "account"), to be administered by the state board.

§13441. Sources of payment into account; availability for expenditure

There is to be paid into the account all moneys from the following sources:

(a) All moneys appropriated by the Legislature for the account.

(b) All moneys contributed to the account by any person and accepted by the state board.

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(c) One-half of all moneys collected by way of criminal penalty and all moneys collected civilly under any proceeding brought pursuant to any provision of this division.

(d) All moneys collected by the state board for the account under Section 13304. The first unencumbered five hundred thousand dollars (\$500,000) paid into the account in any given fiscal year is available without regard to fiscal years, for expenditure by the state board in accordance with the provisions of this article. The next unencumbered five hundred thousand dollars (\$500,000), or any portion thereof, deposited in any given fiscal year, is available for expenditure by the state board for the purposes of this article, subject to the provisions set forth in Section 28 of the Budget Act of 1984 (Chapter 258 of the Statutes of 1984). The next unencumbered one million dollars (\$1,000,000) deposited in the account in any given fiscal year is available for expenditure by the state board for the purposes of Section 13443. The remaining unencumbered funds deposited in the account in any given fiscal year is available without regard to fiscal years to the state board for expenditure for the purposes set forth in Section 13442.

§13441.5. Loans from fund to account

The State Treasurer, when requested by the state board and approved by the Director of Finance, shall transfer moneys in the nature of a loan from the State Water Quality Control Fund to the account created pursuant to Section 13440, which shall be repayable from the account to such fund; provided, that the moneys transferred from the fund to the account shall not exceed the sum of twenty-five thousand dollars (\$25,000) at any one time.

§13442. Use of monies to assist in clean-up

Upon application by a public agency with authority to clean up a waste or abate the effects thereof, the state board may order moneys to be paid from the account to the agency to assist it in cleaning up the waste or abating its effects on waters of the state. The agency shall not become liable to the state board for repayment of such moneys, but this shall not be any defense to an action brought pursuant to subdivision (c) of Section 13304 for the recovery of moneys paid hereunder.

§13443. Use of money for unforeseen water pollution

Upon application by a regional board that is attempting to remedy a significant unforeseen water pollution problem, posing an actual or potential public health threat, and for which the regional board does not have adequate resources budgeted, the state board may order moneys to be paid from the account to the regional board to assist it in responding to the problem.

Chapter 7 Reclamation

Article 1. Title

§13500. Title

This chapter shall be known as and may be cited as the Water Recycling Law.

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Article 2. Legislative Findings and Intent

§13510. Public interest

It is hereby declared that the people of the state have a primary interest in the development of facilities to recycle water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state.

§13511. Findings

The Legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial use of recycled water. The Legislature further finds and declares that the utilization of recycled water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife purposes will contribute to the peace, health, safety and welfare of the people of the state. Use of recycled water constitutes the development of "new basic water supplies" as that term is used in Chapter 5 (commencing with Section 12880) of Part 6 of Division 6.

§13512. Legislative intention

It is the intention of the Legislature that the state undertake all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the state.

Article 3. Financial Assistance

§13515. Authority to loan

In order to implement the policy declarations of this chapter, the state board is authorized to provide loans for the development of water reclamation facilities, or for studies and investigations in connection with water reclamation, pursuant to the provisions of Chapter 6 (commencing with Section 13400) of this division.

Article 4. Regulation of Reclamation

§13520. Recycling criteria

As used in this article "recycling criteria" are the levels of constituents of recycled water, and means for assurance of reliability under the design concept which will result in recycled water safe from the standpoint of public health, for the uses to be made.

§13521. CDPH establishes recycling criteria

The State Department of **Public** Health shall establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

§13522. Abatement by CDPH or local health officer

(a) If the State Department of **Public** Health or a local health officer finds that a contamination exists as a result of the use of recycled water, the department or local health officer shall order the contamination abated in accordance with the procedure provided for in

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Chapter 6 (commencing with Section 5400) of Part 3 of Division 5 of the Health and Safety Code.

(b) The use of recycled water in accordance with the uniform statewide recycling criteria established pursuant to Section 13521, for the purpose of this section, does not cause, constitute, or contribute to, any form of contamination, unless the department or the regional board determines that contamination exists.

§13522.5. Reports

(a) Except as provided in subdivision (e), any person recycling or proposing to recycle water, or using or proposing to use recycled water, within any region for any purpose for which recycling criteria have been established, shall file with the appropriate regional board a report containing information required by the regional board.

(b) Except as provided in subdivision (e), every person recycling water or using recycled water shall file with the appropriate regional board a report of any material change or proposed change in the character of the recycled water or its use.

(c) Each report under this section shall be sworn to, or submitted under penalty of perjury.

(d) This section shall not be construed so as to require any report in the case of any producing, manufacturing, or processing operation involving the recycling of water solely for use in the producing, manufacturing, or processing operation.

(e) Except upon the written request of the regional board, a report is not required pursuant to this section from any user of recycled water which is being supplied by a supplier or distributor for whom a master recycling permit has been issued pursuant to Section 13523.1.

§13522.6. Failure to report

Any person failing to furnish a report under Section 13522.5 when so requested by a regional board is guilty of a misdemeanor.

§13522.7. Injunction

The Attorney General, at the request of the regional board, shall petition the superior court for the issuance of a temporary restraining order, temporary injunction or permanent injunction, or combination thereof, as may be appropriate, requiring any person not complying with Section 13522.5 to comply forthwith.

§13523. CDPH recommendation requirement

(a) Each regional board, after consulting with and receiving the recommendations of the State Department of **Public** Health and any party who has requested in writing to be consulted, and after any necessary hearing, shall, if in the judgment of the board, it is necessary to protect the public health, safety, or welfare, prescribe water reclamation requirements for water that is used or proposed to be used as recycled water.

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(b) The requirements may be placed upon the person recycling water, the user, or both. The requirements shall be established in conformance with the uniform statewide recycling criteria established pursuant to Section 13521. The regional board may require the submission of a preconstruction report for the purpose of determining compliance with the uniform statewide recycling criteria. The requirements for a use of recycled water not addressed by the uniform statewide recycling criteria shall be considered on a case-by-case basis.

§13523.1. Master permit requirements

(a) Each regional board, after consulting with, and receiving the recommendations of, the State Department of Public Health and any party who has requested in writing to be consulted, with the consent of the proposed permittee, and after any necessary hearing, may, in lieu of issuing waste discharge requirements pursuant to Section 13263 or water recycling requirements pursuant to Section 13523 for a user of recycled water, issue a master recycling permit to a supplier or distributor, or both, of recycled water.

(b) A master recycling permit shall include, at least, all of the following:

(1) Waste discharge requirements, adopted pursuant to Article 4 (commencing with Section 13260) of Chapter 4.

(2) A requirement that the permittee comply with the uniform statewide recycling criteria established pursuant to Section 13521. Permit conditions for a use of recycled water not addressed by the uniform statewide water recycling criteria shall be considered on a case-by-case basis.

(3) A requirement that the permittee establish and enforce rules or regulations for recycled water users, governing the design and construction of recycled water use facilities and the use of recycled water, in accordance with the uniform statewide recycling criteria established pursuant to Section 13521.

(4) A requirement that the permittee submit a quarterly report summarizing recycled water use, including the total amount of recycled water supplied, the total number of recycled water use sites, and the locations of those sites, including the names of the hydrologic areas underlying the recycled water use sites.

(5) A requirement that the permittee conduct periodic inspections of the facilities of the recycled water users to monitor compliance by the users with the uniform statewide recycling criteria established pursuant to Section 13521 and the requirements of the master recycling permit.

(6) Any other requirements determined to be appropriate by the regional board.

§13523.5. Salinity exception

A regional board may not deny issuance of water reclamation requirements to a project which violates only a salinity standard in the basin plan.

§13524. Establishment of criteria

No person shall recycle water or use recycled water for any purpose for which recycling criteria have been established until water recycling requirements have been established pursuant to this article or a regional board determines that no requirements are necessary.

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§13525. TRO and injunction

Upon the refusal or failure of any person or persons recycling water or using recycled water to comply with the provisions of this article, the Attorney General, at the request of the regional board, shall petition the superior court for the issuance of a temporary restraining order, preliminary injunction, or permanent injunction, or combination thereof, as may be appropriate, prohibiting forthwith any person or persons from violating or threatening to violate the provisions of this article.

§13525.5. Violation

Any person recycling water or using recycled water in violation of Section 13524, after such violation has been called to his attention in writing by the regional board, is guilty of a misdemeanor. Each day of such recycling or use shall constitute a separate offense.

§13526. Misdemeanor

Any person who, after such action has been called to his attention in writing by the regional board, uses recycled water for any purpose for which recycling criteria have been established prior to the establishment of water recycling requirements, is guilty of a misdemeanor.

§13527. Priority in financial assistance

(a) In administering any statewide program of financial assistance for water pollution or water quality control which may be delegated to it pursuant to Chapter 6 (commencing with Section 13400) of this division, the state board shall give added consideration to water quality control facilities providing optimum water recycling and use of recycled water.

(b) Nothing in this chapter prevents the appropriate regional board from establishing waste discharge requirements if a discharge is involved.

§13528. CDPH powers

This chapter shall not be construed as affecting the powers of the State Department of **Public** Health.

§13529. Unauthorized discharges of recycled water

The Legislature hereby finds and declares all of the following:

(a) The purpose of Section 13529.2 is to establish notification requirements for unauthorized discharges of recycled water to waters of the state.

(b) It is the intent of the Legislature in enacting this section to promote the efficient and safe use of recycled water.

(c) The people of the state have a primary interest in the development of facilities to recycle water to supplement existing water supplies and to minimize the impacts of growing demand for new water on sensitive natural water bodies.

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(d) A substantial portion of the future water requirements of the state may be economically met by the beneficial use of recycled water.

(e) The Legislature has established a statewide goal to recycle 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010.

(f) The use of recycled water has proven to be safe and the State Department of Health Services is drafting regulations to provide for expanded uses of recycled water.

§13529.2. Requirements if unauthorized discharge occurs

(a) Any person who, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water, as defined in subdivision (c), or 1,000 gallons or more of recycled water, as defined in subdivision (d), in or on any waters of the state, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as

- (1) that person has knowledge of the discharge,
- (2) notification is possible, and
- (3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the appropriate regional board.

(b) For the purposes of this section, an unauthorized discharge means a discharge not authorized by waste discharge requirements pursuant to Article 4 of Chapter 4 (commencing with Section 13260), water reclamation requirements pursuant to Section 13523, a master reclamation permit pursuant to Section 13523.1, or any other provision of this division.

(c) For the purposes of this section, "recycled water" means wastewater treated as "disinfected tertiary 2.2 recycled water," as defined or described by the State Department of Health Services or wastewater receiving advanced treatment beyond disinfected tertiary 2.2 recycled water.

(d) For purposes of this section, "recycled water" means "recycled water," as defined in subdivision (n) of Section 13050, which is treated at a level less than "disinfected tertiary 2.2 recycled water," as defined or described by the State Department of Health Services.

(e) The requirements in this section supplement, and shall not supplant, any other provisions of law.

§13529.4. Penalties

(a) Any person refusing or failing to provide the notice required by Section 13529.2, or as required by a condition of waste discharge requirements requiring notification of unauthorized releases of recycled water as defined in Section 13529.2, may be subject to administrative civil liability in an amount not to exceed the following:

- (1) For the first violation, or a subsequent violation occurring more than 365 days from a previous violation, five thousand dollars (\$5,000).

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(2) For a second violation occurring within 365 days of a previous violation, ten thousand dollars (\$10,000).

(3) For a third or subsequent violation occurring within 365 days of a previous violation, twenty-five thousand dollars (\$25,000).

(b) The penalties in this section supplement, and shall not supplant, any other provisions of law.

Article 5. Surveys and Investigations

§13530. Duties of the department

The department, either independently or in cooperation with any person or any county, state, federal, or other agency, or on request of the state board, to the extent funds are allocated therefor, shall conduct surveys and investigations relating to the reclamation of water from waste pursuant to Section 230.

Article 6 Waste Water Regulation

§13540. CDPH authority for findings and regulations

(a) A person shall not construct, maintain, or use any waste well extending to or into a subterranean water-bearing stratum that is used or intended to be used as, or is suitable for, a source of water supply for domestic purposes.

(b)

(1) Notwithstanding subdivision (a), when a regional board finds that water quality considerations do not preclude controlled recharge of the stratum by direct injection, and when the State Department of **Public** Health, following a public hearing, finds the proposed recharge will not degrade the quality of water in the receiving aquifer as a source of water supply for domestic purposes, recycled water may be injected by a well into the stratum. The State Department of **Public** Health may make and enforce any regulations pertaining to this subdivision as it deems proper.

(2) This section shall not be construed to do either or both of the following:

(A) Affect the authority of the state board or regional boards to prescribe and enforce requirements for the discharge.

(B) Preempt the exercise by a water district of its existing ordinance authority to impose or implement stricter standards for protecting groundwater quality in the receiving aquifer.

(c) If the State Department of **Public** Health makes the findings provided for in subdivision (b), the department shall consider the state board's Statement of Policy with Respect to Maintaining High Quality of Waters in California, as set forth in Resolution 68-16, dated October 28, 1968, and shall also consider current and potential future public health consequences of the controlled recharge.

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§13541. Waste well

As used in this article, "waste well" includes any hole dug or drilled into the ground, used or intended to be used for the disposal of waste.

Article 7. Waste Water Reuse

§13550. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the state board, after notice to any person or entity who may be ordered to use recycled water or to cease using potable water and a hearing held pursuant to Article 2 (commencing with Section 648) of Chapter 1.5 of Division 3 of Title 23 of the California Code of Regulations:

(1) The source of recycled water is of adequate quality for these uses and is available for these uses. In determining adequate quality, the state board shall consider all relevant factors, including, but not limited to, food and employee safety, and level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. In addition, the state board shall consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits.

(2) The recycled water may be furnished for these uses at a reasonable cost to the user. In determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water.

(3) After concurrence with the State Department of Health Services, the use of recycled water from the proposed source will not be detrimental to public health.

(4) The use of recycled water for these uses will not adversely affect downstream water rights, will not degrade water quality, and is determined not to be injurious to plantlife, fish, and wildlife.

(b) In making the determination pursuant to subdivision (a), the state board shall consider the impact of the cost and quality of the nonpotable water on each individual user.

(c) The state board may require a public agency or person subject to this article to furnish information which the state board determines to be relevant to making the determination required in subdivision (a).

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§13551. Industry and irrigation for restricted use of potable water prohibited: use of recycled water

A person or public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, shall not use water from any source of quality suitable for potable domestic use for nonpotable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses if suitable recycled water is available as provided in Section 13550; however, any use of recycled water in lieu of water suitable for potable domestic use shall, to the extent of the recycled water so used, be deemed to constitute a reasonable beneficial use of that water and the use of recycled water shall not cause any loss or diminution of any existing water right.

§13552. Restrictions on Sections 13550 and 13551

The amendments to Sections 13550 and 13551 of the Water Code made during the first year of the 1991-92 Regular Session are not intended to alter any rights, remedies, or obligations which may exist prior to January 1, 1992, pursuant to, but not limited to, those sections or Chapter 8.5 (commencing with Section 1501) of Part 1 of Division 1 of the Public Utilities Code.

§13552.2. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for the irrigation of residential landscaping is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for this use, is available to the residents and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

§13552.4. Authority to require use of recycled water for residential landscaping

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for irrigation of residential landscaping, if all of the following requirements are met:

(1) Recycled water, for this use, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The irrigation systems are constructed in accordance with Chapter 3 (commencing with Section 60301) of Division 4 of Title 22 of the California Code of Regulations.

(b) This section applies to both of the following:

(1) New subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after

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March 15, 1994, for which the State Department of **Public** Health has approved the use of recycled water.

(2) Any residence that is retrofitted to permit the use of recycled water for landscape irrigation and for which the State Department of **Public** Health has approved the use of recycled water.

(c)

(1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project that only involves the repiping, redesign, or use of recycled water for irrigation of residential landscaping necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

§13552.5. General Permit for Landscape Irrigation – Use of CDPH Criteria

(a)

(1) On or before July 31, 2009, the state board shall adopt a general permit for landscape irrigation uses of recycled water for which the State Department of Public Health has established uniform statewide recycling criteria pursuant to Section 13521.

(2) The state board shall establish criteria to determine eligibility for coverage under the general permit.

(3) For the purpose of developing the general permit and establishing eligibility criteria to carry out paragraph (1), the state board shall hold at least one workshop and shall consult with and consider comments from the regional boards, groundwater management agencies and water replenishment districts with statutory authority to manage groundwater pursuant to their principal act, and any interested party.

(4) The general permit shall include language that provides for the modification of the terms and conditions of the general permit if a regulatory or statutory change occurs that affects the application of the general permit or as necessary to ensure protection of beneficial uses.

(b) The state board shall establish a reasonable schedule of fees to reimburse the state board for the costs it incurs in implementing, developing, and administering this section.

(c) Following the adoption of the general permit pursuant to this section, an applicant may obtain coverage for a landscape irrigation use of recycled water by filing a notice of intent to be covered under the general permit and submitting the appropriate fee established pursuant to subdivision (b) to the state board.

(d) Coverage under the general permit adopted pursuant to this section is effective if all of the following apply:

(1) The applicant has submitted a completed application.

(2) The state board has determined that the applicant meets the eligibility criteria established pursuant to paragraph (2) of subdivision (a).

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(3) The state board has made the application available for public review and comment for 30 days.

(4) The state board has consulted with the appropriate regional board.

(5) The executive officer of the state board approves the application.

(e)

(1) Except as provided by modification of the general permit, a person eligible for coverage under the general permit pursuant to subdivision (d) is not required to become or remain subject to individual waste discharge requirements or water reclamation requirements.

(2) For a landscape irrigation use of recycled water, a person who is subject to general or individual waste discharge requirements prescribed pursuant to Section 13263 or 13377, or is subject to individual or master water reclamation requirements prescribed pursuant to Section 13523 or 13523.1, may apply for coverage under the general permit adopted pursuant to this section in lieu of remaining subject to requirements prescribed pursuant to those sections.

(f)

(1) The state board shall designate an ombudsperson to coordinate and facilitate communication on recycled water, on the issuance of water reclamation requirements or waste discharge requirements, as applicable, pursuant to Section 13523 or 13523.1 or this section, and on the promotion of water recycling while ensuring reasonable protection of water quality in accordance with applicable provisions of state and federal water quality law.

(2) The person appointed pursuant to paragraph (1) shall facilitate consultations between the state board and the regional boards relating to matters described in that paragraph.

§13552.6. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for floor trap priming, cooling towers, and air-conditioning devices is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user, and the water meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

§13552.8. Recycled water for floor trap priming, cooling towers, and air conditioning

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water in floor trap priming, cooling towers, and air-conditioning devices, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

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(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) If public exposure to aerosols, mist, or spray may occur, appropriate mist mitigation or mist control is provided, such as the use of mist arrestors or the addition of biocides to the water in accordance with criteria established pursuant to Section 13521.

(4) The person intending to use recycled water has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the public agency, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies to both of the following:

(1) New industrial facilities and subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1994, for which the State Department of Health Services has approved the use of recycled water.

(2) Any structure that is retrofitted to permit the use of recycled water for floor traps, cooling towers, or air-conditioning devices, for which the State Department of Health Services has approved the use of recycled water.

(c)

(1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water for floor trap priming, cooling towers, or air-conditioning devices necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

§13553. Use of Recycled Water in Condominium Projects

(a) The Legislature hereby finds and declares that the use of potable domestic water for toilet and urinal flushing in structures is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to furnish **any** information that may be relevant to making the determination required in subdivision (a).

(c) For purposes of this section and Section 13554, "structure" or "structures" means commercial, retail, and office buildings, theaters, auditoriums, condominium projects, schools, hotels, apartments, barracks, dormitories, jails, prisons, and reformatories, and other structures as determined by the State Department of Public Health.

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(d) Recycled water may be used in condominium projects, as defined in Section 1351 of the Civil Code, subject to all of the following conditions:

(1) Prior to the indoor use of recycled water in any condominium project, the agency delivering the recycled water to the condominium project shall file a report with, **and receive written approval of the report from, the State Department of Public Health.** The report shall be consistent with the provisions of Title 22 of the California Code of Regulations generally applicable to dual-plumbed structures and shall include all the following:

(A) That potable water service to each condominium project will be provided with a backflow protection device approved by the State Department of Public Health to protect the agency's public water system, as defined in Section 116275 of the Health and Safety Code. The backflow protection device approved by the State Department of Public Health shall be inspected and tested annually by a person certified in the inspection of backflow prevention devices.

(B) That any plumbing modifications in the condominium unit or any physical alteration of the structure will be done in compliance with state and local plumbing codes.

(C) That each condominium project will be tested by the recycled water agency or the responsible local agency at least once every four years to ensure that there are no indications of a possible cross connection between the condominium's potable and nonpotable systems.

(D) That recycled water lines will be color coded consistent with current statutes and regulations.

(2) The recycled water agency or the responsible local agency shall maintain records of all tests and annual inspections conducted.

(3) The condominium's declaration, as defined in Section 1351 of the Civil Code, shall provide that the laws and regulations governing recycled water apply, **shall not permit any exceptions** to those laws and regulations, shall incorporate the report described in paragraph (1), and shall contain the following statement:

“NOTICE OF USE OF RECYCLED WATER

This property is approved by the State Department of Public Health for the use of recycled water for toilet and urinal flushing. This water is not potable, is not suitable for indoor purposes other than toilet and urinal flushing purposes, and requires dual plumbing. Alterations and modifications to the plumbing system require a permit and are prohibited without first consulting with the appropriate local building code enforcement agency and your property management company or homeowners' association to ensure that the recycled water is not mixed with the drinking water.”

(e) The State Department of Public Health may adopt regulations as necessary to assist in the implementation of this section.

(f) This section shall only apply to condominium projects that are created, within the meaning of Section 1352 of the Civil Code, on or after January 1, 2008.

(g) This section and Section 13554 do not apply to a pilot program adopted pursuant to Section 13553.1.

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§13553.1. Legislative findings

(a) The Legislature hereby finds and declares that certain coastal areas of the state have been using sea water to flush toilets and urinals as a means of conserving potable water; that this practice precludes the beneficial reuse of treated wastewater and has had a deleterious effect on the proper wastewater treatment process, and has led to corrosion of the sea water distribution pipelines and wastewater collection systems; and that this situation must be changed.

(b) There is a need for a pilot program to demonstrate that conversion to the use of recycled water in residential buildings for toilet and urinal flushing does not pose a threat to public health and safety.

(c) A city that is providing a separate distribution system for sea water for use in flushing toilets and urinals in residential structures may, by ordinance, authorize the use of recycled water for the flushing of toilets and urinals in residential structures if the level of treatment and the use of the recycled water meets the criteria set by the State Department of Health Services.

§13554. Recycled water for toilet and urinal flushing

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for toilet and urinal flushing in structures, except a mental hospital or other facility operated by a public agency for the treatment of persons with mental disorders, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The public agency has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the use site, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies only to either of the following:

(1) New structures for which the building permit is issued on or after March 15, 1992, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1992.

(2) Any construction pursuant to subdivision (a) for which the State Department of Health Services has, prior to January 1, 1992, approved the use of recycled water.

(c) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water by a structure necessary to comply with a requirement issued by a public agency under subdivision (a). This exemption does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

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§13554.2. DHS fees

(a) Any person or entity proposing the use of recycled water shall reimburse the State Department of Health Services for reasonable costs that department actually incurs in performing duties pursuant to this chapter.

(b)

(1) Upon a request from the person or entity proposing the use of recycled water, the State Department of Health Services shall, within a reasonable time after the receipt of the request, provide an estimate of the costs that it will reasonably incur in the performance of its duties pursuant to this chapter.

(2) For purposes of implementing subdivision (a), that department shall maintain a record of its costs. In determining those costs, that department may consider costs that include, but are not limited to, costs relating to personnel requirements, materials, travel, and office overhead. The amount of reimbursement shall be equal to, and may not exceed, that department's actual costs.

(c) With the consent of the person or entity proposing the use of recycled water, the State Department of Health Services may delegate all or part of the duties that department performs pursuant to this chapter within a county to a local health agency authorized by the board of supervisors to assume these duties, if, in the judgment of that department, the local health agency can perform these duties. Any person or entity proposing the use of recycled water shall reimburse the local health agency for reasonable costs that the local health agency actually incurs in the performance of its duties delegated pursuant to this subdivision.

(d)

(1) Upon a request from the person or entity proposing the use of recycled water, the local health agency shall, within a reasonable time after the receipt of the request, provide an estimate of the cost it will reasonably incur in the performance of its duties delegated under subdivision (c).

(2) The local health agency, if delegated duties pursuant to subdivision (c), shall maintain a record of its costs that include, but is not limited to, costs relating to personnel requirements, materials, travel, and office overhead. The amount of reimbursement shall be equal to, and may not exceed, the local health agency's actual costs.

(e) The State Department of Health Services or local health agency shall complete its review of a proposed use of recycled water within a reasonable period of time. That department shall submit to the person or entity proposing the use of recycled water a written determination as to whether the proposal submitted is complete for purposes of review within 30 days from the date of receipt of the proposal and shall approve or disapprove the proposed use within 30 days from the date on which that department determines that the proposal is complete.

(f) An invoice for reimbursement of services rendered shall be submitted to the person or entity proposing the use of recycled water subsequent to completion of review of the proposed use, or other services rendered, that specifies the number of hours spent by the State Department

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of Health Services or local health agency, specific tasks performed, and other costs actually incurred. Supporting documentation, including receipts, logs, timesheets, and other standard accounting documents, shall be maintained by that department or local health agency and copies, upon request, shall be provided to the person or entity proposing the use of recycled water.

(g) For the purposes of this section, "person or entity proposing the use of recycled water" means the producer or distributor of recycled water submitting a proposal to the department.

§13554.3. State Board fees

The State Water Resources Control Board may establish a reasonable schedule of fees by which it is reimbursed for the costs it incurs pursuant to Sections 13553 and 13554.

§13555.2. Legislative intent

The Legislature hereby finds and declares that many local agencies deliver recycled water for nonpotable uses and that the use of recycled water is an effective means of meeting the demands for new water caused by drought conditions or population increases in the state. It is the intent of the Legislature to encourage the design and construction of water delivery systems on private property that deliver water for both potable and nonpotable uses in separate pipelines.

§13555.3. Separate pipelines

(a) Water delivery systems on private property that could deliver recycled water for nonpotable uses described in Section 13550, that are constructed on and after January 1, 1993, shall be designed to ensure that the water to be used for only potable domestic uses is delivered, from the point of entry to the private property to be served, in a separate pipeline which is not used to deliver the recycled water.

(b) This section applies to water delivery systems on private property constructed within either of the following jurisdictions:

(1) One that has an urban water management plan that includes the intent to develop recycled water use.

(2) One that does not have an urban water management plan that includes recycled water use, but that is within five miles of a jurisdiction that does have an urban water management plan that includes recycled water use, and has indicated a willingness to serve the water delivery system.

(c) This section does not preempt local regulation of the delivery of water for potable and nonpotable uses and any local governing body may adopt requirements which are more restrictive than the requirements of this section.

§13556. Acquisition and provision of recycled water for beneficial use

In addition to any other authority provided in law, any water supplier described in subdivision (b) of Section 1745 may acquire, store, provide, sell, and deliver recycled water for any beneficial use, including, but not limited to, municipal, industrial, domestic, and irrigation uses,

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if the water use is in accordance with statewide recycling criteria and regulations established pursuant to this chapter.

§13557. Regulation to safely plumb buildings with both potable and recycled water systems

(a) On or before July 1, 2008, the department, in consultation with the State Department of Public Health, shall adopt and submit to the California Building Standards Commission regulations to establish a state version of Appendix J of the Uniform Plumbing Code adopted by the International Association of Plumbing and Mechanical Officials to provide design standards to safely plumb buildings with both potable and recycled water systems.

(b) The department shall adopt regulations pursuant to subdivision (a) only if the Legislature appropriates funds for that purpose.

Chapter 7.3. Direct and Indirect Potable Reuse

§13560. Legislative Findings - Direct and Indirect Potable Reuse

The Legislature finds and declares the following:

(a) In February 2009, the state board unanimously adopted, as Resolution No. 2009-0011, an updated water recycling policy, which includes the goal of increasing the use of recycled water in the state over 2002 levels by at least 1,000,000 acre-feet per year by 2020 and by at least 2,000,000 acre-feet per year by 2030.

(b) Section 13521 requires the department to establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

(c) The use of recycled water for indirect potable reuse is critical to achieving the state board's goals for increased use of recycled water in the state. If direct potable reuse can be demonstrated to be safe and feasible, implementing direct potable reuse would further aid in achieving the state board's recycling goals.

(d) Although there has been much scientific research on public health issues associated with indirect potable reuse through groundwater recharge, there are a number of significant unanswered questions regarding indirect potable reuse through surface water augmentation and direct potable reuse.

(e) Achievement of the state's goals depends on the timely development of uniform statewide recycling criteria for indirect and direct potable water reuse.

(f) This chapter is not intended to delay, invalidate, or reverse any study or project, or development of regulations by the department, the state board, or the regional boards regarding the use of recycled water for indirect potable reuse for groundwater recharge, surface water augmentation, or direct potable reuse.

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(g) This chapter shall not be construed to delay, invalidate, or reverse the department's ongoing review of projects consistent with Section 116551 of the Health and Safety Code.

§13561. Chapter Definitions

For purposes of this chapter, the following terms have the following meanings:

(a) "Department" means the State Department of Public Health.

(b) "Direct potable reuse" means the planned introduction of recycled water either directly into a public water system, as defined in Section 116275 of the Health and Safety Code, or into a raw water supply immediately upstream of a water treatment plant.

(c) "Indirect potable reuse for groundwater recharge" means the planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system, as defined in Section 116275 of the Health and Safety Code.

(d) "Surface water augmentation" means the planned placement of recycled water into a surface water reservoir used as a source of domestic drinking water supply.

(e) "Uniform water recycling criteria" has the same meaning as in Section 13521.

§13561.5. Board agreement with Department

The state board shall enter into an agreement with the department to assist in implementing this chapter.

§13562. Department adoption of indirect potable reuse criteria

(a)

(1) On or before December 31, 2013, the department shall adopt uniform water recycling criteria for indirect potable reuse for groundwater recharge.

(2)

(A) Except as provided in subparagraph (C), on or before December 31, 2016, the department shall develop and adopt uniform water recycling criteria for surface water augmentation.

(B) Prior to adopting uniform water recycling criteria for surface water augmentation, the department shall submit the proposed criteria to the expert panel convened pursuant to subdivision (a) of Section 13565. The expert panel shall review the proposed criteria and shall adopt a finding as to whether, in its expert opinion, the proposed criteria would adequately protect public health.

(C) The department shall not adopt uniform water recycling criteria for surface water augmentation pursuant to subparagraph (A), unless and until the expert panel adopts a finding that the proposed criteria would adequately protect public health.

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(b) Adoption of uniform water recycling criteria by the department is subject to the requirements of Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code.

§13563. Department report on direct potable reuse

(a)

(1) The department shall investigate and report to the Legislature on the feasibility of developing uniform water recycling criteria for direct potable reuse.

(2) The department shall complete a public review draft of its report by June 30, 2016. The department shall provide the public not less than 45 days to review and comment on the public review draft.

(3) The department shall provide a final report to the Legislature by December 31, 2016. The department shall make the final report available to the public.

(b) In conducting the investigation pursuant to subdivision (a), the department shall examine all of the following:

(1) The availability and reliability of recycled water treatment technologies necessary to ensure the protection of public health.

(2) Multiple barriers and sequential treatment processes that may be appropriate at wastewater and water treatment facilities.

(3) Available information on health effects.

(4) Mechanisms that should be employed to protect public health if problems are found in recycled water that is being served to the public as a potable water supply, including, but not limited to, the failure of treatment systems at the recycled water treatment facility.

(5) Monitoring needed to ensure protection of public health, including, but not limited to, the identification of appropriate indicator and surrogate constituents.

(6) Any other scientific or technical issues that may be necessary, including, but not limited to, the need for additional research.

(c)

(1) Notwithstanding Section 10231.5 of the Government Code, the requirement for submitting a report imposed under paragraph (3) of subdivision (a) is inoperative on December 31, 2020.

(2) A report to be submitted pursuant to paragraph (3) of subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

§13563.5. Department report to legislature

(a) The department, in consultation with the state board, shall report to the Legislature as part of the annual budget process, in each year from 2011 to 2016, inclusive, on the progress towards developing and adopting uniform water recycling criteria for surface water augmentation and its investigation of the feasibility of developing uniform water recycling criteria for direct potable reuse.

(b)

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(1) A written report submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

(2) Pursuant to Section 10231.5 of the Government Code, this section is repealed on January 1, 2017.

§13564. Surface Water Augmentation considerations

In developing uniform recycling criteria for surface water augmentation, the department shall consider all of the following:

(a) The final report from the National Water Research Institute Independent Advisory Panel for the City of San Diego Indirect Potable Reuse/Reservoir Augmentation (IPR/RA) Demonstration Project.

(b) Monitoring results of research and studies regarding surface water augmentation.

(c) Results of demonstration studies conducted for purposes of approval of projects using surface water augmentation.

(d) Epidemiological studies and risk assessments associated with projects using surface water augmentation.

(e) Applicability of the advanced treatment technologies required for recycled water projects, including, but not limited to, indirect potable reuse for groundwater recharge projects.

(f) Water quality, limnology, and health risk assessments associated with existing potable water supplies subject to discharges from municipal wastewater, stormwater, and agricultural runoff.

(g) Recommendations of the State of California Constituents of Emerging Concern Recycled Water Policy Science Advisory Panel.

(h) State funded research pursuant to Section 79144 and subdivision (b) of Section 79145.

(i) Research and recommendations from the United States Environmental Protection Agency Guidelines for Water Reuse.

(j) Other relevant research and studies regarding indirect potable reuse of recycled water.

§13565. Expert panels and advisory groups

(a)

(1) The department shall convene and administer an expert panel for the purposes of advising the department on public health issues and scientific and technical matters regarding development of uniform water recycling criteria for indirect potable reuse through surface water augmentation and investigation of the feasibility of developing uniform water recycling criteria for direct potable reuse.

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(2) The expert panel shall be comprised, at a minimum, of a toxicologist, an engineer licensed in the state with at least three years' experience in wastewater treatment, an engineer licensed in the state with at least three years' experience in treatment of drinking water supplies and knowledge of drinking water standards, an epidemiologist, a microbiologist, and a chemist.

(3) Members of the expert panel may be reimbursed for reasonable and necessary travel expenses.

(b)

(1) The department may appoint an advisory group, task force, or other group, comprised of no fewer than nine representatives of water and wastewater agencies, local public health officers, environmental organizations, environmental justice organizations, public health nongovernmental organizations, and the business community, to advise the department regarding the development of uniform water recycling criteria for direct potable reuse.

(2) Environmental, environmental justice, and public health nongovernmental organization representative members of the advisory group, task force, or other group may be reimbursed for reasonable and necessary travel expenses.

§13566. Feasibility considerations for direct potable reuse

In performing its investigation of the feasibility of developing the uniform water recycling criteria for direct potable reuse, the department shall consider all of the following:

(a) Recommendations from the expert panel appointed pursuant to subdivision (a) of Section 13565.

(b) Recommendations from an advisory group, task force, or other group appointed by the department pursuant to subdivision (b) of Section 13565.

(c) Regulations and guidelines for these activities from jurisdictions in other states, the federal government, or other countries.

(d) Research by the state board regarding unregulated pollutants, as developed pursuant to Section 10 of the recycled water policy adopted by state board Resolution No. 2009-0011.

(e) Results of investigations pursuant to Section 13563.

(f) Water quality and health risk assessments associated with existing potable water supplies subject to discharges from municipal wastewater, stormwater, and agricultural runoff.

§13567. Federal & State references - consistency

An action authorized pursuant to this chapter shall be consistent, to the extent applicable, with the federal Clean Water Act (33 U.S.C. Sec. 1251 et seq.), the federal Safe Drinking Water Act (42 U.S.C. Sec. 300f et seq.), this division, and the California Safe Drinking Water Act (Chapter 4 (commencing with Section 116270) of Part 12 of Division 104 of the Health and Safety Code).

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§13569. Department funding

The department may accept funds from any source, and may expend these funds, upon appropriation by the Legislature, for the purposes of this chapter.

Chapter 7.5. Water Recycling Act of 1991

§13575. Recycling Act title

(a) This chapter shall be known and may be cited as the Water Recycling Act of 1991.

(b) As used in this chapter, the following terms have the following meanings:

(1) "Customer" means a person or entity that purchases water from a retail water supplier.

(2) "Entity responsible for groundwater replenishment" means any person or entity authorized by statute or court order to manage a groundwater basin and acquire water for groundwater replenishment.

(3) "Recycled water" has the same meaning as defined in subdivision (n) of Section 13050.

(4) "Recycled water producer" means any local public entity that produces recycled water.

(5) "Recycled water wholesaler" means any local public entity that distributes recycled water to retail water suppliers and which has constructed, or is constructing, a recycled water distribution system.

(6) "Retail water supplier" means any local entity, including a public agency, city, county, or private water company, that provides retail water service.

(7) "Retailer" means the retail water supplier in whose service area is located the property to which a customer requests the delivery of recycled water service.

§13576. Legislative findings

The Legislature hereby makes the following findings and declarations:

(a) The State of California is subject to periodic drought conditions.

(b) The development of traditional water resources in California has not kept pace with the state's population, which is growing at the rate of over 700,000 per year and which is anticipated to reach 36,000,000 by the year 2010.

(c) There is a need for a reliable source of water for uses not related to the supply of potable water to protect investments in agriculture, greenbelts, and recreation and to replenish groundwater basins, and protect and enhance fisheries, wildlife habitat, and riparian areas.

(d) The environmental benefits of recycled water include a reduced demand for water in the Sacramento-San Joaquin Delta that is otherwise needed to maintain water quality, reduced discharge of waste into the ocean, and the enhancement of groundwater basins, recreation, fisheries, and wetlands.

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(e) The use of recycled water has proven to be safe from a public health standpoint, and the State Department of **Public Health** is updating regulations for the use of recycled water.

(f) The use of recycled water is a cost-effective, reliable method of helping to meet California's water supply needs.

(g) The development of the infrastructure to distribute recycled water will provide jobs and enhance the economy of the state.

(h) Retail water suppliers and recycled water producers and wholesalers should promote the substitution of recycled water for potable water and imported water in order to maximize the appropriate cost-effective use of recycled water in California.

(i) Recycled water producers, retail water suppliers, and entities responsible for groundwater replenishment should cooperate in joint technical, economic, and environmental studies, as appropriate, to determine the feasibility of providing recycled water service.

(j) Retail water suppliers and recycled water producers and wholesalers should be encouraged to enter into contracts to facilitate the service of recycled and potable water by the retail water suppliers in their service areas in the most efficient and cost-effective manner.

(k) Recycled water producers and wholesalers and entities responsible for groundwater replenishment should be encouraged to enter into contracts to facilitate the use of recycled water for groundwater replenishment if recycled water is available and the authorities having jurisdiction approve its use.

(l) Wholesale prices set by recycled water producers and recycled water wholesalers, and rates that retail water suppliers are authorized to charge for recycled water, should reflect an equitable sharing of the costs and benefits associated with the development and use of recycled water.

§13577. Water recycling goal

This chapter establishes a statewide goal to recycle a total of 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010.

§13578. Recycled Water Task Force

(a) In order to achieve the statewide goal for recycled water use established in Section 13577 and to implement the Governor's Advisory Drought Planning Panel Critical Water Shortage Contingency Plan recommendations, Section F2, as submitted December 29, 2000, the department shall identify and report to the Legislature on opportunities for increasing the use of recycled water, as defined in paragraph (3) of subdivision (b) of Section 13575, and identify constraints and impediments, including the level of state financial assistance available for project construction, to increasing the use of recycled water.

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(b) The department shall convene a task force, to be known as the 2002 Recycled Water Task Force, to advise the department in implementation of subdivision (a), including making recommendations to the Legislature regarding the following:

(1) How to further the use of recycled water in industrial and commercial applications, including, but not limited to, those applications set forth in Section 13552.8. The task force shall evaluate the current regulatory framework of state and local rules, regulations, ordinances, and permits to identify the obstacles and disincentives to industrial and commercial reuse. Issues to be investigated include, but are not limited to, applicability of visual inspections instead of pressure tests for cross-connections between potable and nonpotable water systems, dual piping trenching restrictions, fire suppression system design, and backflow protections.

(2) Changes in the Uniform Plumbing Code, published by the International Association of Plumbing and Mechanical Officials, that are appropriate to facilitate the use of recycled water in industrial and commercial settings. The department shall make recommendations to the California Building Standards Commission with regard to suggested revisions to the California Plumbing Code necessary to incorporate the changes identified by the task force.

(3) Changes in state statutes or the current regulatory framework of state and local rules, regulations, ordinances, and permits appropriate to increase the use of recycled water for commercial laundries and toilet and urinal flushing in structures including, but not limited to, those defined in subdivision (c) of Section 13553. The department shall identify financial incentives to help offset the cost of retrofitting privately and publicly owned structures.

(4) The need to reconvene the California Potable Reuse Committee established by the department in 1993 or convene a successor committee to update the committee's finding that planned indirect potable reuse of recycled water by augmentation of surface water supplies would not adversely affect drinking water quality if certain conditions were met.

(5) The need to augment state water supplies using water use efficiency strategies identified in the CALFED Bay-Delta Program. In its report pursuant to subdivision (a), the department shall identify ways to coordinate with CALFED to assist local communities in educating the public with regard to the statewide water supply benefits of local recycling projects and the level of public health protection ensured by compliance with the uniform statewide water recycling criteria developed by the State Department of **Public** Health in accordance with Section 13521.

(6) Impediments or constraints, other than water rights, related to increasing the use of recycled water in applications for agricultural, environmental, or irrigation uses, as determined by the department.

(c)

(1) The task force shall be convened by the department and be comprised of one representative from each of the following state agencies:

(A) The department.

(B) The State Department of **Public** Health.

(C) The state board.

(D) The California Environmental Protection Agency.

(E) The CALFED Bay-Delta Program.

(F) The Department of Food and Agriculture.

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(G) The **California** Building Standards Commission.

(H) The University of California.

(I) The **Natural** Resources Agency.

(2) The task force shall also include one representative from a recognized environmental advocacy group and one representative from a consumer advocacy group, as determined by the department, and one representative of local agency health officers, one representative of urban water wholesalers, one representative from a groundwater management entity, one representative of water districts, one representative from a nonprofit association of public and private members created to further the use of recycled water, one representative of commercial real estate, one representative of land development, one representative of industrial interests, and at least two representatives from each of the following as defined in Section 13575:

(A) Recycled water producer.

(B) Recycled water wholesaler.

(C) Retail water supplier.

(d) The department and the task force shall report to the Legislature not later than July 1, 2003.

(e) The department shall carry out the duties of this section only to the extent that funds pursuant to Section 79145, enacted as part of the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Division 26 (commencing with Section 79000)), are made available for the purposes of this section

§13579. Identification of potential uses

(a) In order to achieve the goals established in Section 13577, retail water suppliers shall identify potential uses for recycled water within their service areas, potential customers for recycled water service within their service areas, and, within a reasonable time, potential sources of recycled water.

(b) Recycled water producers and recycled water wholesalers may also identify potential uses for recycled water, and may assist retail water suppliers in identifying potential customers for recycled water service within the service areas of those retail water suppliers.

(c) Recycled water producers, retail water suppliers, and entities responsible for groundwater replenishment may cooperate in joint technical, economic, and environmental studies, as appropriate, to determine the feasibility of providing recycled water service and recycled water for groundwater replenishment consistent with the criteria set forth in paragraphs (1) to (3), inclusive, of subdivision (a) of Section 13550 and in accordance with Section 60320 of Title 22 of the California Code of Regulations.

§13580. Application for recycled water supply

(a) A retail water supplier that has identified a potential use or customer pursuant to Section 13579 may apply to a recycled water producer or recycled water wholesaler for a recycled water supply.

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(b) A recycled water producer or recycled water wholesaler that has identified a potential use or customer pursuant to Section 13579 may, in writing, request a retail water supplier to enter into an agreement to provide recycled water to the potential customer.

(c) A customer may request, in writing, a retailer to enter into an agreement to provide recycled water to the customer.

(d)

(1) An entity responsible for groundwater replenishment that is a customer of a retail water supplier and that has identified the potential use of recycled water for groundwater replenishment purposes may, in writing, request that retail water supplier to enter into an agreement to provide recycled water for that purpose. That entity may not obtain recycled water for that purpose from a recycled water producer, a recycled water wholesaler, or another retail water supplier without the agreement of the entity's retail water supplier.

(2) An entity responsible for groundwater replenishment that is not a customer of a retail water supplier and that has identified the potential use of recycled water for groundwater replenishment purposes may, in writing, request a retail water supplier, a recycled water producer, or a recycled water wholesaler to enter into an agreement to provide recycled water for that purpose.

§13580.5. Agreements

(a)

(1) Subject to subdivision (e) of Section 13580.7, a retail water supplier that receives a request from a customer pursuant to subdivision (c) of Section 13580 shall enter into an agreement to provide recycled water, if recycled water is available, or can be made available, to the retail water supplier for sale to the customer.

(2) Notwithstanding paragraph (1), in accordance with a written agreement between a recycled water producer or a recycled water wholesaler and a retail water supplier, the retail water supplier may delegate to a recycled water producer or a recycled water wholesaler its responsibility under this section to provide recycled water.

(b) A customer may not obtain recycled water from a recycled water producer, a recycled water wholesaler, or a retail water supplier that is not the retailer without the agreement of the retailer.

(c) If either a recycled water producer or a recycled water wholesaler provides a customer of a retail water supplier with a written statement that it can and will provide recycled water to the retailer, the retail water supplier shall, not later than 120 days from the date on which the retail water supplier receives the written statement from the customer, by certified mail, return receipt requested, submit a written offer to the customer. A determination of availability pursuant to Section 13550 is not required.

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(d) If the state board pursuant to Section 13550 makes a determination that there is available recycled water to serve a customer of a retail water supplier, the retail water supplier, not later than 120 days from the date on which the retail water supplier receives a copy of that determination from the customer, by certified mail, return receipt requested, shall submit a written offer to the customer.

§13580.7. Public Agency Retail Water Suppliers

(a) This section applies only to a retail water supplier that is a public agency.

(b) A customer may request, in writing, a retail water supplier to enter into an agreement or adopt recycled water rates in order to provide recycled water service to the customer. The retail water supplier, by certified mail return receipt requested, shall submit a written offer to the customer not later than 120 days from the date on which the retail water supplier receives the written request from the customer.

(c) If no rate is in effect for recycled water service within the service area of a retail water supplier, the rate and conditions for recycled water service shall be established by contract between the retail water supplier and the customer, not later than 120 days from the date on which the customer requests a contract, or, by resolution or ordinance by the retail water supplier, not later than 120 days from the date on which the retail water supplier receives the customer's written request for an ordinance or resolution.

(d) A rate for recycled water service established by contract, ordinance, or resolution, shall reflect a reasonable relationship between the amount of the rate and the retail cost of obtaining or producing the recycled water, the cost of conveying the recycled water, and overhead expenses for providing recycled water service. Capital costs of facilities required to serve the customer shall be amortized over the economic life of the facility, or the length of time the customer agrees to purchase recycled water, whichever is less. The rate shall not exceed the estimated reasonable cost of providing the service, and any additional costs agreed to by the customer for recycled water supplemental treatment.

(e) The rate for recycled water shall be comparable to, or less than, the retail water supplier's rate for potable water. If recycled water service cannot be provided at a rate comparable to, or less than, the rate for potable water, the retail water supplier is not required to provide the recycled water service, unless the customer agrees to pay a rate that reimburses the retail water supplier for the costs described in subdivision (c).

(f) The offer required by subdivisions (c) and (d) of Section 13580.5 shall identify all of the following:

- (1) The source for the recycled water.
- (2) The method of conveying the recycled water.
- (3) A schedule for delivery of the recycled water.
- (4) The terms of service.
- (5) The rate for the recycled water, including the per-unit cost for that water.

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(6) The costs necessary to provide service and the basis for determining those costs.

(g) This section does not apply to recycled water service rates established before January 1, 1999, or any amendments to those rates.

§13580.8. Retail water supplier regulated by the PUC

(a) This section applies only to a retail water supplier that is regulated by the Public Utilities Commission.

(b) Rates for recycled water that is provided to the customer by a retail water supplier regulated by the Public Utilities Commission shall be established by the commission pursuant to Section 455.1 of the Public Utilities Code. A regulated water utility may request the commission to establish the rate or rates for the delivery of recycled or nonpotable water, with the objective of providing, where practicable, a reasonable economic incentive for the customer to purchase recycled or nonpotable water in place of potable water.

(c) A regulated water utility may propose a rate or rates for recycled or nonpotable water by tariff or by contract between the retail water supplier and the customer. Where the rate or rates are set by contract, the water utility and its customer shall meet, confer, and negotiate in good faith to establish a contract rate.

(d) The commission shall, as appropriate, provide a discount from the general metered rate of the water utility for potable water by either of the following means:

(1) Passing through to the customer the net reduction in cost to the water utility in purchasing and delivering recycled or nonpotable water as compared to the cost of purchasing and delivering potable water.

(2) Granting to the customer a uniform discount from the water utility's general metered potable water rate when the discount in paragraph (1) is determined to be an insufficient incentive for the customer to convert to the use of recycled or nonpotable water. If the commission provides for a discount pursuant to this paragraph that is greater than the water utility's reduction in cost, the commission shall authorize the water utility to include the aggregate amount of that discount in its revenue requirements to be applied to, and recovered in, rates that are applicable to all general metered customers.

§13580.9. City of West Covina

(a) Notwithstanding any **other law**, and except as otherwise previously provided for in a contract agreed to by the customer and the City of West Covina, if the purchaser, contractor, or lessee of, or successor to, all or a portion of the water utility owned by the City of West Covina is a retail water supplier that is regulated by the Public Utilities Commission, rates for recycled or nonpotable water service to a closed hazardous waste and solid waste facility located within the boundaries of the City of West Covina for the purposes of irrigation, recreation, or dust suppression or any other use at that facility shall be established in accordance with subdivisions (a) to (e), inclusive, of Section 13580.7, and if there is a failure to agree on the terms and

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conditions of a recycled or nonpotable water supply agreement for the delivery of water for those purposes by that purchaser, contractor, lessee, or successor, Section 13581 shall apply.

(b) For the purpose of this section, nonpotable water that is not the result of the treatment of waste shall be treated as the equivalent of recycled water if it is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor considered a valuable resource, if the use of that water will not adversely affect downstream water rights, degrade water quality, or be injurious to plant life, fish, or wildlife, as provided by statute or by regulations of the State Department of **Public** Health and the state board or a regional board, as appropriate.

§13581. Formal mediation process

(a) If there is a failure to agree on terms and conditions of a recycled water supply agreement involving a retail water supplier that is a public agency within 180 days from the date of the receipt of a request for recycled water pursuant to subdivision (c) of Section 13580, a written statement pursuant to subdivision (c) of Section 13580.5, or a determination of availability pursuant to subdivision (d) of Section 13580.5, any party may request a formal mediation process. The parties shall commence mediation within 60 days after the mediation request is made. If the parties cannot agree on a mediator, the director shall appoint a mediator. The mediator may recommend to the parties appropriate terms and conditions applicable to the service of recycled water. The cost for the services of the mediator shall be divided equally among the parties to the mediation and shall not exceed twenty thousand dollars (\$20,000).

(b) If the parties in mediation reach agreement, both parties together shall draft the contract for the recycled water service. The parties shall sign the contract within 30 days.

(c) If the parties in mediation fail to reach agreement, the affected retail water supplier shall, within 30 days, by resolution or ordinance, adopt a rate for recycled water service. The agency action shall be subject to validating proceedings pursuant to Chapter 9 (commencing with Section 860) of Part 2 of Title 10 of the Code of Civil Procedure, except that there shall not be a presumption in favor of the retail water supplier under the action taken to set the rate for recycled water service. The mediator shall file a report with the superior court setting forth the recommendations provided to the parties regarding appropriate terms and conditions applicable to the service of recycled water. Each party shall bear its own costs and attorney's fees.

§13581.2. Process for a retail water supplier regulated by the PUC

If the retail water supplier is regulated by the Public Utilities Commission, and there is a failure to agree on terms and conditions of a recycle water supply agreement with a customer within 180 days from the date of the receipt of a request for recycled water pursuant to subdivision (c) of Section 13580, a written statement pursuant to subdivision (c) of Section 13580.5, or a determination of availability pursuant to subdivision (d) of Section 13580.5, the matter shall be submitted to the Public Utilities Commission for resolution, and the commission shall determine a contract rate or rates for recycled water as provided in Section 13580.8.

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§13582. Construction of chapter

This chapter is not intended to alter either of the following:

- (a) Any rights, remedies, or obligations which may exist pursuant to Article 1.5 (commencing with Section 1210) of Chapter 1 of Part 2 of Division 2 of this code or Chapter 8.5 (commencing with Section 1501) of Part 1 of Division 1 of the Public Utilities Code.
- (b) Any rates established or contracts entered into prior to January 1, 1999.

§13583. Noncompliance

(a) If a retail water supplier that is a public agency does not comply with this chapter, the customer may petition a court for a writ of mandate pursuant to Chapter 2 (commencing with Section 1084) of Title 1 of Part 3 of the Code of Civil Procedure.

(b) If a retail water supplier is regulated by the Public Utilities Commission and does not comply with this chapter, the Public Utilities Commission may order the retailer to comply with this chapter after receiving a petition from the customer specifying the provisions of this chapter with which the retailer has failed to comply.

Chapter 9. Waste Water Treatment Plant Classification and Operator Certifications

§13627. Classification and Operator Certifications (as amended effective January 2011)

(a) Supervisors and operators of those wastewater treatment plants described in paragraph (1) or (2) of subdivision (b) of Section 13625 shall possess a certificate of appropriate grade. Subject to the approval of regulations by the state board, supervisors and operators of those wastewater treatment plants described in paragraph (3) of subdivision (b) of Section 13625 shall possess certificates of the appropriate grade. All certificates shall be issued in accordance with, and to the extent recommended by the advisory committee and required by, regulations adopted by the state board. The state board shall develop and specify in its regulations the training necessary to qualify a supervisor or operator for certification for each type and class of plant. The state board may accept experience in lieu of qualification training. For supervisors and operators of water recycling treatment plants, the state board may approve use of a water treatment plant operator of appropriate grade certified by the State Department of Public Health pursuant to Article 3 (commencing with Section 106875) of Chapter 4 of Part 1 of Division 104 of the Health and Safety Code in lieu of a wastewater treatment plant operator certified by the state board, provided that the state board may refuse to approve use of an operator certified by the department or may suspend or revoke its approval of the use of an operator certified by the department if the operator commits any of the prohibited acts described in Article 7 (commencing with Section 3710) of Chapter 26 of Division 3 of Title 23 of the California Code of Regulations.

(b) The regional water quality control board, with jurisdiction for issuing and ensuring compliance with applicable water reclamation or waste discharge requirements, shall notify the

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department in writing if, pursuant to an inspection conducted under Section 13267, the regional board makes a determination that there are reasonable grounds for not issuing, or for suspending or revoking, the certificate of a certified water treatment plant operator who is operating or supervising the operation of a water recycling treatment plant. The department shall make its determination regarding the issuance, suspension, or revocation of a certificate in accordance with Section 106876 of the Health and Safety Code.

(c) For purposes of this section, "water recycling treatment plant" means a treatment plant that receives and further treats secondary or tertiary effluent, or both, from a wastewater treatment plant.

(d) A person employed as a wastewater treatment plant supervisor or operator on the effective date of regulations adopted pursuant to this chapter shall be issued an appropriate certificate if the person meets the training, education, and experience requirements prescribed by regulations.

(e) The state board may refuse to grant, suspend, or revoke any certificate issued by the state board to operate a wastewater treatment plant, or may place on probation, or reprimand, the certificate holder upon any reasonable ground, including, but not limited to, all of the following reasons:

- (1) Submitting false or misleading information on an application for a certificate.
- (2) The employment of fraud or deception in the course of operating the wastewater treatment plant.
- (3) A certificate holder's failure to use reasonable care or judgment in the operation of the plant.
- (4) A certificate holder's inability to perform operating duties properly.
- (5) Willfully or negligently violating, or causing, or allowing the violation of, waste discharge requirements or permits issued pursuant to the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.).

(f) The state board shall conduct all proceedings for the refusal to grant a certificate, and suspension or revocation of a certificate, pursuant to subdivision (e), in accordance with the rules adopted pursuant to Section 185.

Chapter 22. Graywater for Home Irrigation

§14875. Application of chapter

This chapter applies to the construction, installation, or alteration of graywater systems for subsurface irrigation and other safe uses.

§14875.1. Department definition

"Department" means the Department of Water Resources.

§14876. Graywater definition

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"Graywater" means untreated wastewater which has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and which does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs but does not include wastewater from kitchen sinks or dishwashers.

§14877. Graywater system definition

"Graywater system" means a system and devices, attached to the plumbing system for the sanitary distribution or use of graywater.

§14877.1. Consultation with CDPH on standards

(a) The department, in consultation with the State Department of Public Health and the Center for Irrigation Technology at California State University, Fresno, shall adopt standards for the installation of graywater systems. In adopting these standards, the department shall consider, among other resources, "Appendix J," as adopted on September 29, 1992, by the International Association of Plumbing and Mechanical Officials, the graywater standard proposed for the latest edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, the City of Los Angeles Graywater Pilot Project Final Report issued in November 1992, and the advice of the Center for Irrigation Technology at California State University, Fresno, on the installation depth for subsurface drip irrigation systems.

(b) The department shall include among the approved methods of subsurface irrigation, but shall not be limited to, drip systems.

(c) The department shall revise its graywater systems standards as needed.

(d) The authority of the department under this chapter to adopt standards for residential buildings shall terminate upon the approval by the California Building Standards Commission of the standards submitted to that commission pursuant to Section 17922.12 of the Health and Safety Code.

§14877.2. Local administration

A graywater system may be installed if the city or county having jurisdiction over the installation determines that the system complies with standards adopted by the department.

§14877.3. City or county—more stringent

After a public hearing, a city or county may adopt, by ordinance, standards that prohibit the use of graywater or standards that are more restrictive than the standards adopted by the department, as appropriate for the local area.

* * * * *

**2. California Regulations Related to Reclaimed
Water – CA Department of Public Health
Drinking Water Branch**

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California Department of Public Health

Regulations Related to Recycled Water

January 2009

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TITLE 17 CODE OF REGULATIONS

Division 1. State Department of Health Services

Chapter 5. Sanitation (Environmental)

Group 4. Drinking Water Supplies

Article 1. General.

§7583. Definitions.

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter:

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(a) "Approved Water Supply" is a water supply whose potability is regulated by a State of local health agency.

(b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.

(c) "Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.

(d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).

(e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.

(f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

(g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.

(h) "Local Health Agency" means the county or city health authority.

(i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.

(j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.

(l) "Water Supplier" is the person who owns or operates the public water system.

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(m) "Water User" is any person obtaining water from a public water supply.

§7584. Responsibility and scope of program.

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

- (a) The adoption of operating rules or ordinances to implement the cross-connection program.
- (b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,
- (c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,
- (d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,
- (e) The establishment of a procedure or system for testing backflow preventers, and
- (f) The maintenance of records of locations, tests, and repairs of backflow preventers.

§7585. Evaluation of hazard.

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

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(a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.

(b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.

(c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.

(d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

(e) Premises having a repeated history of cross-connections being established or re-established.

§7586. User supervisor.

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

Article 2. Protection of Water System.

§7601. Approval of backflow preventers.

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

§7602. Construction of backflow preventers.

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

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(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

§7603. Location of backflow preventers.

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

§7604. Type of protection required.

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP) and an Air gap Separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard, are given in Table 1. Situations not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

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**TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED**

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP
(c) Recycled water	
(1) Premises where the public water system is used to supplement the recycled water supply.	AG
(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RP
(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water	DC

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supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).

(d) Fire Protection Systems

(1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected). DC

(2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier. AG

(3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used. DC

(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building. DC

(e) Dockside Watering Points and Marine Facilities

(1) Pier hydrants for supplying water to vessels for any purpose. RP

(2) Premises where there are marine facilities. RP

(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist. RP

(g) Premises where there is a repeated history of crossconnections being established or re-established. RP

§7605. Testing and maintenance of backflow preventers.

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if

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determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

TITLE 22 CODE OF REGULATIONS

Division 4. Environmental Health

Chapter 1. Introduction

Article 1. Definitions

§60001. Department.

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

§60003. Director.

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

Chapter 2. Regulations for the Implementation of the California Environmental Quality

Article 1. General Requirements and Categorical Exemptions

§60100. General requirements.

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines

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for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

§60101. Specific activities within categorical exempt classes.

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

(1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.

(2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.

(b) Class 2: Replacement or Reconstruction.

(1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.

(2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.

(3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.

(c) Class 3: New Construction of Small Structures.

(1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.

(2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.

(d) Class 4: Minor Alterations to Land.

(1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.

(2) Any minor alterations to highway crossings for water supply and distribution lines.

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Chapter 3. Water Recycling Criteria

Article 1. Definitions.

§60301. Definitions.

§60301.100. Approved laboratory.

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

§60301.160. Coagulated wastewater.

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

§60301.170. Conventional treatment.

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

§60301.200. Direct beneficial use.

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

§60301.220. Disinfected secondary-2.2 recycled water.

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

§60301.225. Disinfected secondary-23 recycled water.

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform

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bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

§60301.230. Disinfected tertiary recycled water.

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

- (a) The filtered wastewater has been disinfected by either:
 - (1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or
 - (2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaqueforming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

(b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

§60301.240. Drift.

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

§60301.245. Drift eliminator.

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

§60301.250. Dual plumbed system.

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

- (a) To serve plumbing outlets (excluding fire suppression systems) within a building or

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(b) Outdoor landscape irrigation at individual residences.

§60301.300. F-Specific bacteriophage MS-2.

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC15597B1) and is grown on lawns of *E. coli* (ATCC 15597).

§60301.310. Facility.

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

§60301.320. Filtered wastewater.

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

- (1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and
- (2) So that the turbidity of the filtered wastewater does not exceed any of the following:
 - (A) An average of 2 NTU within a 24-hour period;
 - (B) 5 NTU more than 5 percent of the time within a 24-hour period; and
 - (C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

- (1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and
- (2) 0.5 NTU at any time.

§60301.330. Food crops.

"Food crops" means any crops intended for human consumption.

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§60301.400. Hose bibb.

"Hose bibb" means a faucet or similar device to which a common garden hose can be readily attached.

§60301.550. Landscape impoundment.

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

§60301.600. Modal contact time.

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

§60301.620. Nonrestricted recreational impoundment.

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

§60301.630. NTU.

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

§60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

§60301.660. Peak dry weather design flow.

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

§60301.700. Recycled water agency.

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"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

§60301.710. Recycling plant.

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

§60301.740. Regulatory agency.

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

§60301.750. Restricted access golf course.

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

§60301.760. Restricted recreational impoundment.

"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

§60301.800. Spray irrigation.

"Spray irrigation" means the application of recycled water to crops to maintain vegetation or support growth of vegetation by applying it from sprinklers.

§60301.830. Standby unit process.

"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

§60301.900. Undisinfected secondary recycled water.

"Undisinfected secondary recycled water" means oxidized wastewater.

§60301.920. Use area.

"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

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Article 2. Sources of Recycled Water.

§60302. Source specifications.

The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

Article 3. Uses of Recycled Water.

§60303. Exceptions.

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

§60304. Use of recycled water for irrigation.

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

- (1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,
- (2) Parks and playgrounds,
- (3) School yards,
- (4) Residential landscaping,
- (5) Unrestricted access golf courses, and
- (6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

- (1) Cemeteries,
- (2) Freeway landscaping,
- (3) Restricted access golf courses,

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- (4) Ornamental nursery stock and sod farms where access by the general public is not restricted,
 - (5) Pasture for animals producing milk for human consumption, and
 - (6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard
- (d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:
- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
 - (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,
 - (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),
 - (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,
 - (5) Seed crops not eaten by humans,
 - (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
 - (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.
- (e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

§60305. Use of recycled water for impoundments.

- (a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.
- (b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:
- (1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The

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ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.

(2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

§60306. Use of recycled water for cooling.

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other microorganisms.

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§60307. Use of recycled water for other purposes.

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

- (1) Flushing toilets and urinals,
- (2) Priming drain traps,
- (3) Industrial process water that may come into contact with workers,
- (4) Structural fire fighting,
- (5) Decorative fountains,
- (6) Commercial laundries,
- (7) Consolidation of backfill around potable water pipelines,
- (8) Artificial snow making for commercial outdoor use, and
- (9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:

- (1) Industrial boiler feed,
- (2) Nonstructural fire fighting,
- (3) Backfill consolidation around nonpotable piping,
- (4) Soil compaction,
- (5) Mixing concrete,
- (6) Dust control on roads and streets,
- (7) Cleaning roads, sidewalks and outdoor work areas and
- (8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

Article 4. Use Area Requirements.

§60310. Use area requirements.

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

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- (1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - (2) The well contains an annular seal that extends from the surface into the aquitard.
 - (3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - (4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - (5) The owner of the well approves of the elimination of the buffer zone requirement.
- (b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.
- (c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.
- (d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.
- (e) Any use of recycled water shall comply with the following:
- (1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.
 - (2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
 - (3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
- (f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.
- (g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant

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demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

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Water Recycling Criteria
FIGURE 60310-A

Water Recycling Criteria

FIGURE 60310-A

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Article 5. Dual Plumbed Recycled Water Systems.

§60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums. *(Note: AB 1046, Chapter 537, Statutes of 2007, Water Code 13533, et seq., allows condominiums to be plumbed with recycled water, subject to a number of provisions. This regulation will be changed in future CDPH rulemaking to be consistent with the revised statutory requirements.)*

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

§60314. Report submittal.

(a) For dual-plumbed recycled water systems, the report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

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- (E) The specific use to be made of the recycled water at each facility.
- (2) Plans and specifications describing the following:
 - (A) Proposed piping system to be used,
 - (B) Pipe locations of both the recycled and potable systems,
 - (C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and
 - (D) The methods and devices to be used to prevent backflow of recycled water into the public water system.
- (3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

§60315. Design requirements.

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of title 17, California Code of Regulations, and the approval of the public water system has been obtained.

§60316. Operation requirements.

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

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(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

Article 5.1. Groundwater recharge.

§60320. Groundwater recharge.

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services’ recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services’ recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

Article 5.5. Other Methods of Treatment.

§60320.5. Other methods of treatment.

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

Article 6. Sampling and Analysis.

§60321. Sampling and analysis.

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary

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recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24- hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

Article 7. Engineering Report and Operational Requirements.

§60323. Engineering report.

(a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

§60325. Personnel.

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

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(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

§60327. Maintenance.

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

§60329. Operating records and reports.

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

§60331. Bypass.

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

Article 8. General Requirements of Design.

§60333. Flexibility of design.

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

§60335. Alarms.

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

- (1) Loss of power from the normal power supply.
- (2) Failure of a biological treatment process.

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- (3) Failure of a disinfection process.
- (4) Failure of a coagulation process.
- (5) Failure of a filtration process.
- (6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

§60337. Power supply.

The power supply shall be provided with one of the following reliability features:

- (a) Alarm and standby power source.
- (b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.
- (c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

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Article 9. Reliability Requirements for Primary Effluent.

§60339. Primary treatment.

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

Article 10. Reliability Requirements for Full Treatment.

§60341. Emergency storage or disposal.

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

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(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

§60343. Primary treatment.

All primary treatment unit processes shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Standby primary treatment unit process.
- (c) Long-term storage or disposal provisions.

§60345. Biological treatment.

All biological treatment unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.

§60347. Secondary sedimentation.

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

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- (a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.
- (b) Standby sedimentation unit process.
- (c) Long-term storage or disposal provisions.

§60349. Coagulation.

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

- (1) Standby feeders,
- (2) Adequate chemical stowage and conveyance facilities,
- (3) Adequate reserve chemical supply, and
- (4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

- (1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions, or
- (5) Alarm and standby coagulation process.

§60351. Filtration.

All filtration unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.

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(e) Alarm and standby filtration unit process.

§60353. Disinfection.

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

- (1) Standby chlorine supply,
- (2) Manifold systems to connect chlorine cylinders,
- (3) Chlorine scales, and
- (4) Automatic devices for switching to full chlorine cylinders. Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

- (1) Alarm and standby chlorinator;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions; or
- (5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

§60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

* * * * *

3. Clearwater Program – L.A. County Sanitation District



(877) 300-WATER

Sanitation Districts of Los Angeles County

Joint Outfall System

The Joint Outfall System is a *regional, interconnected system* of facilities providing wastewater collection and treatment for residential, commercial and industrial users in 73 cities. The system includes the main Joint Water Pollution Control Plant (JWPCP) in Carson and the following six satellite Water Reclamation Plants (WRPs):

- Whittier Narrows WRP (near South El Monte)
- Los Coyotes WRP (Cerritos)
- San Jose Creek WRP (adjacent to the City of Industry)
- Long Beach WRP (Long Beach)
- Pomona WRP (Pomona)
- La Cañada WRP (La Cañada Flintridge)

JWPCP History and Facts

- Placed in operation February 4, 1928
- Treatment Capacity: 400 mgd
- Size: 400 acres, about half of which is for treating wastewater and the other half is buffer property
- Central solids processing facilities for all seven treatment facilities
- Green Energy Facility placed in operation December 20, 1985
- Electricity production: 18 megawatt (MW) – enough to run the plant

Water Reclamation Plants

Pomona. The Pomona WRP, located in Pomona, has a treatment capacity of 15 mgd. More than half the purified water produced at this facility is supplied to local distribution systems operated by the Pomona Water Department and the Walnut Valley Water District. Over half of the purified water produced by the Pomona WRP is reused for irrigation of parks, schools, golf courses, landscaping and green belts, and irrigation and dust control at the Spadra landfill. The remainder of the purified water is discharged into the San Jose Creek flood control channel where it makes its way into the unlined portion of the San Gabriel River and percolates into groundwater for reuse.

San Jose Creek. The San Jose Creek WRP, located in an unincorporated area near the City of Industry, is the Districts' largest WRP and has a treatment capacity of 100 mgd. Approximately half of the purified water produced at this plant is reused for groundwater recharge and irrigation of parks, schools, and greenbelts. The remainder flows into the San Gabriel River and to the ocean.

Whittier Narrows. The Whittier Narrows WRP, located in an unincorporated area near South El Monte in the Whittier Narrows Flood Control Basin, has a treatment capacity of 15 mgd. Virtually all of the purified water produced at the Whittier Narrows WRP is reused as groundwater recharge into the Rio Hondo and San Gabriel Coastal Spreading Grounds or for irrigation at an adjacent nursery.

Los Coyotes. The Los Coyotes WRP, located in Cerritos, has a treatment capacity of 37.5 mgd. Purified water from the Los Coyotes WRP is used for irrigation of the Ironwood Nine Golf Course and driving range, schools, parks, nurseries and green belts, and industrial use at local companies in several neighboring cities. The remainder flows into the San Gabriel River and to the ocean.

Long Beach. The Long Beach WRP, located in Long Beach, has a treatment capacity of 25 mgd. Purified water produced at this WRP is reused by the City of Long Beach for irrigation and landscaping. The remainder flows into the San Gabriel River and to the ocean.

La Cañada. The La Canada WRP is located on the grounds of the La Canada Flintridge Country Club. The plant serves the 425 homes surrounding the golf course. All of the treated water is put into the four lakes on the 105-acre golf course. Lake water is used for landscape irrigation of the golf course.

Sewers and Pumping Plants

The Joint Outfall System contains over 1260 miles of trunk sewers ranging in diameter from 8-inches to 144-inches (12 feet). The trunk sewers collect flow from local sewers operated by the individual cities and the County of Los Angeles. About 85 percent of the flow is collected by gravity, but the remainder must be pumped before it reaches one of the treatment plants. Fifty-two pumping plants are strategically located throughout the system to compensate for differences in terrain that prevent the wastewater from reaching treatment plants by gravity alone.

Cities in the Joint Outfall System

City	District(s)	City	District(s)	City	District(s)
Alhambra	2,16	Hawthorne	5	Pasadena	15,16,17
Arcadia	15,22	Hermosa Beach	SBC	Pico Rivera	2,18
Artesia	2,18,19	Huntington Park	1	Pomona	21
Azusa	22	Industry	15,18,21	Rancho Palos Verdes	SBC,5
Baldwin Park	15,22	Inglewood	5	Redondo Beach	SBC,5
Bell	1,2	Irwindale	15,22	Rolling Hills	5
Bellflower	2,3,18	La Cañada Flintridge	28,34	Rolling Hills Estates	SBC,5
Bell Gardens	2	La Habra Heights	18	Rosemead	15
Bradbury	15,22	Lakewood	3,19	San Dimas	21,22
Carson	8	La Mirada	28	San Gabriel	2,15
Cerritos	2,3,18,19	La Puente	15,21	San Marino	15,16
Claremont	21	La Verne	21,22	Santa Clarita	26,32
Commerce	2	Lawndale	5	Santa Fe Springs	18
Compton	1,2,8	Lomita	5	Sierra Madre	15
Covina	22	Long Beach	1,2,3,8,19	Signal Hill	3,29
Cudahy	1	Los Angeles	1,2,3,5,8,16	South El Monte	15
Culver City	5	Lynwood	1	South Gate	1,2
Diamond Bar	21	Manhattan Beach	SBC,5	South Pasadena	16
Downey	2,18	Maywood	1	Temple City	15
Duarte	15,22	Monrovia	15,22	Torrance	SBC,5
El Monte	15	Montebello	2,15	Vernon	1,2,23
El Segundo	SBC,5	Monterey Park	2,15	Walnut	21,22
Gardena	5	Norwalk	2,18	West Covina	15,21,22
Glendora	22	Palos Verdes Estates	SBC,5	Whittier	2,15,18
Hawaiian Gardens	19	Paramount	1,2	Total = 73 cities	

4. California Laws for Reclaimed Water – “The Purple Book” – CA DPH Drinking Water Branch

California Health Laws Related to Recycled Water

"The Purple Book"

Excerpts from the Health and Safety Code, Water Code, and Titles 22 and 17 of the California Code of Regulations

Last Update: June 2001

The document is meant to be an aid to staff of the Drinking Water Program within the Department of Health Services Division of Drinking Water and Environmental Management. It should not be relied upon by the regulated community as the State of California's representation of the law, since the published codes are the only official representations of the law.

Published codes are available on the Internet at <http://www.leginfo.ca.gov/> (statutes) and <http://ccr.oal.ca.gov/> (regulations). They are also available at law libraries -- call your County Bar Association for the nearest location.

Every effort has been made to assure the accuracy of this compilation. Readers who find an error or who are aware of an omission should contact Jeff Stone of DHS' Recycled Water Unit at jstone1@dhs.ca.gov.

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HEALTH AND SAFETY CODE

Division 104. Environmental Health Services Part 12. Drinking Water Chapter 4. California Safe Drinking Water Act

Article 7. Requirements and Compliance

116551. Augmentation of source with recycled water

The department shall not issue a permit to a public water system or amend a valid existing permit for the use of a reservoir as a source of supply that is directly augmented with recycled water, as defined in subdivision (n) of Section 13050 of the Water Code, unless the department does all of the following:

- (a) Performs an engineering evaluation that evaluates the proposed treatment technology and finds that the proposed technology will ensure that the recycled water meets or exceeds all applicable primary and secondary drinking water standards and poses no significant threat to public health.
- (b) Hold at least three duly noticed public hearings in the area where the recycled water is proposed to be used or supplied for human consumption to receive public testimony on that proposed use. The department shall make available to the public, not less than 10 days prior to the date of the first hearing held pursuant to this subdivision, the evaluations and findings made pursuant to subdivision (a).

Chapter 5. Water Equipment and Control

Article 2. Cross-Connection Control by Water Users

116800. Control of users

Local health officers may maintain programs for the control of cross-connections by water users, within the users' premises, where public exposure to drinking water contaminated by backflow may occur. The programs may include inspections within water users premises for the purpose of identifying cross-connection hazards and determining appropriate backflow protection. Water users shall comply with all orders, instructions, regulations, and notices from the local health officer with respect to the installation, testing, and maintenance of backflow prevention devices. The local health

officer may collect fees from those water users subject to inspection to offset the costs of implementing cross-connection control programs.

116805. Fees

(a) Local health officers may maintain programs, in cooperation with water suppliers, to protect against backflow through service connections into the public water supply, and, with the consent of the water supplier, may collect fees from the water supplier to offset the costs of implementing these programs.

(b) The fees authorized under this section and under Section 116800 shall be limited to the costs of administering these programs. At the discretion of the water supplier, the fees collected from the water supplier by the local health officer may be passed through to water users.

(c) Programs authorized under this section and Section 116800 shall be conducted in accordance with backflow protection regulations adopted by the department.

(d) Nothing in this article shall prevent a water supplier from directly charging those water users required to install backflow prevention devices for the costs of the programs authorized in this section and Section 116800.

116810. Certification of device testers

To assure that testing and maintenance of backflow prevention devices are performed by persons qualified to do testing and maintenance, local health officers may maintain programs for certification of backflow prevention device testers. The local health officer may suspend, revoke, or refuse to renew the certificate of a tester, if, after a hearing before the local health officer or his or her designee, the local health officer or his or her designee finds that the tester has practiced fraud or deception or has displayed gross negligence or misconduct in the performance of his or her duties as a certified backflow prevention device tester. The local health officer may collect fees from certified testers to offset the cost of the certification program provided pursuant to this section. The certification standards shall be consistent with the backflow protection regulations adopted by the department.

116815. Purple pipe for recycled water

(a) All pipes installed above or below the ground, on and after June 1, 1993, that are designed to carry recycled water, shall be colored purple or distinctively wrapped with purple tape.

(b) Subdivision (a) shall apply only in areas served by a water supplier delivering water for municipal and industrial purposes, and n no event shall apply to any of the following:

(1) Municipal or industrial facilities that have established a labeling or marking system for recycled water on their premises, as otherwise required by a local agency, that clearly distinguishes recycled water from potable water.

(2) Water delivered for agricultural use.

(c) For purposes of this section, "recycled water" has the same meaning as defined in subdivision (n) of Section 13050 of the Water Code.

116820. Violations

Any person who violates any provision of this article, violates any order of the local health officer pursuant to this article, or knowingly files a false statement or report required by the local health officer pursuant to this article is guilty of a misdemeanor punishable by a fine not exceeding five hundred dollars (\$500) or by imprisonment not exceeding 30 days in the county jail or by both such fine and imprisonment. Each day of a violation of any provision of this article or of any order of the local health officer beyond the time stated for compliance of the order shall be a separate offense.

WATER CODE

Division 7. Water Quality Chapter 2. Definitions

13050. Terms used in this division

As used in this division:

- (a) "State board" means the State Water Resources Control Board.
- (b) "Regional board" means any California regional water quality control board for a region as specified in Section 13200.
- (c) "Person" includes any city, county, district, the state, and the United States, to the extent authorized by federal law.
- (d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.
- (e) "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state.
- (f) "Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.
- (g) "Quality of the water" refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.
- (h) "Water quality objectives" means the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

(i) "Water quality control" means the regulation of any activity or factor which may affect the quality of the waters of the state and includes the prevention and correction of water pollution and nuisance.

(j) "Water quality control plan" consists of a designation or establishment for the waters within a specified area of all of the following:

(1) Beneficial uses to be protected.

(2) Water quality objectives.

(3) A program of implementation needed for achieving water quality objectives.

(k) "Contamination" means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(l) (1) "Pollution" means an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following:

(A) The waters for beneficial uses.

(B) Facilities which serve these beneficial uses.

(2) "Pollution" may include "contamination."

(m) "Nuisance" means anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

(n) "Recycled water" means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor considered a valuable resource.

(o) "Citizen or domiciliary" of the state includes a foreign corporation having substantial business contacts in the state or which is subject to service of process in this state.

(p) (1) "Hazardous substance" means either of the following:

(A) For discharge to surface waters, any substance determined to be a hazardous substance pursuant to Section 311(b)(2) of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.).

(B) For discharge to groundwater, any substance listed as a hazardous waste or hazardous material pursuant to Section 25140 of the Health and Safety Code, without regard to whether the substance is intended to be used, reused, or discarded, except that "hazardous substance" does not include any substance excluded from Section 311 (b)(2) of the Federal Water Pollution Control Act because it is within the scope of Section 311(a)(1) of that act.

(2) "Hazardous substance" does not include any of the following:

(A) Nontoxic, nonflammable, and noncorrosive stormwater runoff drained from underground vaults, chambers, or manholes into gutters or storm sewers.

(B) Any pesticide which is applied for agricultural purposes or is applied in accordance with a cooperative agreement authorized by Section 116180 of the Health and Safety Code, and is not discharged accidentally or for purposes of disposal, the application of which is in compliance with all applicable state and federal laws and regulations.

(C) Any discharge to surface water of a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act.

(D) Any discharge to land which results, or probably will result, in a discharge to groundwater if the amount of the discharge to land is less than a reportable quantity, as determined by regulations adopted pursuant to Section 13271, for substances listed as hazardous pursuant to Section 25140 of the Health and Safety Code. No discharge shall be deemed a discharge of a reportable quantity until regulations set a reportable quantity for the substance discharged.

(q) (1) "Mining waste" means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and processing of ores and minerals. Mining waste includes, but is not limited to, soil, waste rock, and overburden, as defined in Section 2732 of the Public Resources Code, and tailings, slag, and other processed waste materials, including cementitious materials that are managed at the cement manufacturing facility where the materials were generated.

(2) For the purposes of this subdivision, "cementitious material" means cement, cement kiln dust, clinker, and clinker dust.

(r) "Master recycling permit" means a permit issued to a supplier or a distributor, or both, of recycled water, that includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements prescribed pursuant to Section 13523.1.

13051. Injection well

As used in this division, "injection well" means any bored, drilled, or driven shaft, dug pit, or hole in the ground into which waste or fluid is discharged, and any associated subsurface appurtenances, and the depth of which is greater than the circumference of the shaft, pit, or hole.

13169. Groundwater protection program

(a) The state board is authorized to develop and implement a groundwater protection program as provided under the Safe Drinking Water Act, Section 300 and following of Title 42 of the United States Code, and any federal act that amends or supplements the Safe Drinking Water Act. The authority of the state board under this section includes, but is not limited to, the following:

(1) To apply for and accept state groundwater protection grants from the federal government.

(2) To take any additional action as may be necessary or appropriate to assure that the state's groundwater protection program complies with any federal regulations issued pursuant to the Safe Drinking Water Act or any federal act that amends or supplements the Safe Drinking Water Act.

(b) Nothing in this section is intended to expand the authority of the state board as authorized under the Porter-Cologne Water Quality Control Act (Div. 7 (commencing with Sec. 13000) Wat. C.).

13274. Public water system rights

(a) Notwithstanding any other provision of law, any public water system regulated by the State Department of Health Services shall have the same legal rights and remedies against a responsible party, when the water supply used by that public water system is contaminated, as those of a private land owner whose groundwater has been contaminated.

(b) For purposes of this section, "responsible party" has the same meaning as defined in Section 25323.5 of the Health and Safety Code.

Chapter 6. Financial Assistance

Article 1. State Water Quality Control Fund

13400. Definitions

As used in this chapter, unless otherwise apparent from the context:

(a) "Fund" means the State Water Quality Control Fund.

(b) "Public agency" means any city, county, city and county, district, or other political subdivision of the state.

(c) "Facilities" means:

(1) facilities for the collection, treatment, or export of waste when necessary to prevent water pollution,

(2) facilities to recycle wastewater and to convey recycled water,

(3) facilities or devices to conserve water, or

(4) any combination of the foregoing.

13401. Fund's continuing existence

(a) The State Water Quality Control Fund is continued in existence. The following moneys in the fund are appropriated, without regard to fiscal years, for expenditure by the state board in making loans to public agencies in accordance with this chapter:

(1) The balance of the original moneys deposited in the fund.

(2) Any money repaid to the fund.

(3) Any remaining balance of the money in the fund deposited therein after the specific appropriations for loans to the South Tahoe Public Utility District, the North Tahoe Public Utility District, the Tahoe City Public Utility District, the Truckee Sanitary District, and to any other governmental entity in the areas served by such districts have been made.

(b) Notwithstanding subdivision (a), upon the order of the state board, the money in the State Water Quality Control Fund shall be transferred to the State Water Pollution Control Revolving Fund.

Article 2. Loans to Local Agencies

13410. Applications

Applications for construction loans under this chapter shall include:

(a) A description of the proposed facilities.

(b) A statement of facts showing the necessity for the proposed facilities and showing that funds of the public agency are not available for financing such facilities and that the sale of revenue or general obligation bonds through private financial institutions is impossible or would impose an unreasonable burden on the public agency.

(c) A proposed plan for repaying the loan.

(d) Other information as required by the state board.

13411. DHS consultation

Upon a determination by the state board, after consultation with the State Department of Health, that

(a) the facilities proposed by an applicant are necessary to the health or welfare of the inhabitants of the state,

(b) that the proposed facilities meet the needs of the applicant,

(c) that funds of the public agency are not available for financing such facilities and that the sale of revenue or general obligation bonds through private financial institutions is impossible or would impose an unreasonable burden on the public agency,

(d) that the proposed plan for repayment is feasible,

(e) in the case of facilities proposed under Section 13400(c)(1) that such facilities are necessary to prevent water pollution,

(f) in the case of facilities proposed under Section 13400(c)(2) that such facilities will produce recycled water and that the public agency has adopted a feasible program for use thereof, and

(g) in the case of facilities proposed under Section 13400(c)(3) that such facilities are a cost effective means of conserving water, the state board, subject to approval by the Director of Finance, may loan to the applicant such sum as it determines is not otherwise available to the public agency to construct the proposed facilities.

13412. Repayment

No loan shall be made to a public agency unless it executes an agreement with the state board under which it agrees to repay the amount of the loan, with interest, within 25 years at 50 percent of the average interest rate paid by the state on general obligation bonds sold in the calendar year immediately preceding the year in which the loan agreement is executed.

13413. Construction halted under health department orders

It is the policy of this state that, in making construction loans under this article, the state board should give special consideration to facilities proposed to be constructed by public agencies in areas in which further construction of buildings has been halted by order of the State Department of Health or a local health department, or both, or notice has been given that such an order is being considered; provided, however, that the public agencies designated in this section shall otherwise comply with and meet all requirements of other provisions of this chapter.

13414. Funding monies repaid

All money received in repayment of loans under this chapter shall be paid to the State Treasurer and credited to the fund.

13415. Loans for studies and investigations

(a) Loans may be made by the state board to public agencies to pay not more than one-half of the cost of studies and investigations made by such public agencies in connection with waste water reclamation.

(b) Not more than a total of two hundred thousand dollars (\$200,00) shall be loaned pursuant to this section in any fiscal year, and not more than fifty thousand dollars (\$50,000) shall be loaned to any public agency in any fiscal year pursuant to this section. In the event that less than two million dollars (\$2,000,000) is available in any fiscal year for loans under this article, then not more than 10 percent of the available amount shall be available for loans for studies and investigations pursuant to this section.

(c) Applications for such loans shall be made in such form, and shall contain such information, as may be required by the state board.

(d) Such loans shall be repaid within a period not to exceed 10 years, with interest at a rate established in the manner provided in Section 13412.

13416. Election required to enter into loan contract

Before a public agency may enter into a contract with the state board for a construction loan under this chapter, the public agency shall hold an election on the proposition of whether or not the public agency shall enter into the proposed contract and more than 50 percent of the votes cast at such election must be in favor of such proposition.

13417. Election procedure

The election shall be held in accordance with the following provisions:

(a) The procedure for holding an election on the incurring of bonded indebtedness by such public agency shall be utilized for an election of the proposed contract as nearly as the same may be applicable. Where the law applicable to such agency does not contain such bond election procedure, the procedure set forth in the Revenue Bond Law of 1941 (Chapter 6 (commencing with Section 54300) Part 1, Division 2, Title 5 of the Government Code), as it may now or hereafter be amended, shall be utilized as nearly as the same may be applicable.

(b) No particular form of ballot is required.

(c) The notice of the election shall include a statement of the time and place of the election, the purpose of the election, the general purpose of the contract, and the maximum amount of money to be borrowed from the state under the contract.

(d) The ballots for the election shall contain a brief statement of the general purpose of the contract substantially as stated in the notice of the election, shall state the maximum amount of money to be borrowed from the state under the contract, and shall contain the words "Execution of contract --Yes" and "Execution of contract--No."

(e) The election shall be held in the entire public agency except where the public agency proposes to contract with the state board on behalf of a specified portion, or of specified portions of the public agency, in which case the election shall be held in such portion or portions of the public agency only.

13418. Tahoe moratorium

Notwithstanding any provision of this chapter or any other provision of law, including, but not limited to, the provisions of Chapter 47 and 137 of the Statutes of 1966, First Extraordinary Session, Chapter 1679 of the Statutes of 1967, Chapter 1356 of the Statutes of 1969, and Chapter 920 of the Statutes of 1970, or the provisions of any existing loan contract entered into pursuant to this chapter or any other such provision of law, there shall be a two-year moratorium following the effective date of this section on that portion of the principal and interest payments otherwise required in repayment of funds heretofore loaned to the North Tahoe Public Utility District, the Tahoe City Public Utility District, the South Tahoe Public Utility District, the Truckee Sanitary District, the Squaw Valley County Water District, and the Alpine Springs County Water District pursuant to this chapter or any act of the Legislature authorizing a state loan for the purpose of permitting any such agency to construct necessary sewage and storm drainage facilities to prevent and control water pollution in the area served by such agency, equal in percentage, as determined by the Department of Finance, to the percentage of property tax revenues lost to the agency by reason of the adoption of Article XIII A of the California Constitution, unless moneys are otherwise available for such repayment from state allocations or the sale of bonds authorized on or before July 1, 1978, but unissued. The provisions of this section do not apply to any sums which are required to be repaid immediately or in accordance with an accelerated time schedule pursuant to a duly entered stipulated judgment between the State of California and the Tahoe City Public Utility District. Interest on loans shall accrue during the moratorium period and be repaid by the recipients of the loans, in addition to the normal principal and interest payments.

Article 2.5 Local Bonds

13425. Applications

Applications for guarantees for local agency bonds under this chapter shall include:

- (a) A description of the proposed facilities.
- (b) A financing plan for the proposed facilities, including the amount of debt and maximum term to maturity of the proposed local agency bond issue and identification of sources of revenue that will be dedicated to payment of principal and interest on the bonds.
- (c) Other information as required by the state board. The state board may provide that the application may be combined with applications for any other source of funds administered by the state board.

13426. Consultation with DHS on determinations

The state board, subject to approval by the Director of Finance, may agree to provide a guarantee pursuant to this article for all or a specified part of the proposed local agency bond issue upon making, after consultation with the State Department of Health Services, all of the following determinations:

- (a) The facilities proposed by an applicant are necessary to the health or welfare of the inhabitants of the state and are consistent with water quality control plans adopted by regional boards.
- (b) The proposed facilities meet the needs of the applicant.
- (c) The proposed bond issue and plan repayment are sound and feasible.
- (d) In the case of facilities proposed under paragraph (2) of subdivision (c) of Section 13400, the facilities will produce recycled water and the applicant has adopted a feasible program for the use of the facilities. The state board may adopt criteria for ranking and setting priorities among applicants for those guarantees.

13427. Agreement by applicant

No guarantee shall be extended to any applicant unless it executes an agreement with the state board under which the applicant agrees to the following provisions:

- (a) To proceed expeditiously with, and complete, the proposed project.
- (b) To commence operation of the project on completion, and to properly operate and maintain the work in accordance with applicable provisions of law.
- (c) To issue bonds and to levy fines, charges, assessments, or taxes to pay the principal of, and interest on, the bonds as described in the application.
- (d) To diligently and expeditiously collect those levies, including timely exercise of available legal remedies in the event of delinquency or default.
- (e) To act in accordance with such other provisions as the state board may require.

13428. Clean Water Bond Guarantee Fund

Notwithstanding Section 13340 of the Government Code, the money in the Clean Water Bond Guarantee Fund, which is hereby created, is continuously appropriated to the state board without regard to fiscal years for the purposes of this chapter.

13429. Investment of money in fund

Money in the Clean Water Bond Guarantee Fund not needed for making payments on guaranteed bonds pursuant to this chapter shall be invested pursuant to law. All proceeds of the investment shall be deposited in that fund to the extent permitted by federal law.

13430. Limitation on authorization to guarantee bonds

The state board's authorization to guarantee bonds under this article shall be limited to bonds with a total principal amount of not more than 10 times the amount in the Clean Water Bond Guarantee Fund at the time the state board determines to extend each guarantee pursuant to Section 13426.

13431. Limitation on amounts paid

Under no circumstances shall the amount paid out as a result of bond guarantees extended pursuant to this article exceed the amount in the Clean Water Bond Guarantee Fund. This article does not express or imply any commitment by the state board or any other agency of the state to pay any money or levy any charge or tax or otherwise exercise its faith and credit on behalf of any local agency or bondholder beyond the funds in the Clean Water Bond Guarantee Fund.

13432. Annual Fee

The state board may charge an annual fee not to exceed one-tenth of 1 percent of the principal amount of each bond issue that it guarantees for guarantee coverage. The state board may charge a lesser amount. The proceeds of any fee shall be paid into the Clean Water Bond Guarantee Fund.

13433. Rules and procedures authority

The state board shall, by regulation, prescribe rules and procedures for all of the following:

- (a) To pay money from the Clean Water Bond Guarantee Fund to an insured local agency or bondholder in the event that the amount in the local agency's bond reserve fund falls below a minimum amount, or in the event of failure by the local agency to pay the principal of, or interest on, an insured bond issue on time, as the state board may require.
- (b) To require, by court action if necessary, a local agency to raise sewer service charges, levy additional assessments, collect charges or assessments, or foreclose or otherwise sell property as needed to prevent a reduction in the local agency's bond reserve fund, or to prevent default, or to collect funds to repay to the fund any payments made pursuant to subdivision (a).

Article 3. State Water Pollution Cleanup and Abatement Account

13440. Fund established

There is in the State Water Quality Control Fund the State Water Pollution Cleanup and Abatement Account (hereinafter called the "account"), to be administered by the state board.

13441. Sources of payment into account; availability for expenditure

There is to be paid into the account all moneys from the following sources:

- (a) All moneys appropriated by the Legislature for the account.
- (b) All moneys contributed to the account by any person and accepted by the state board.

(c) One-half of all moneys collected by way of criminal penalty and all moneys collected civilly under any proceeding brought pursuant to any provision of this division.

(d) All moneys collected by the state board for the account under Section 13304.

The first unencumbered five hundred thousand dollars (\$500,000) paid into the account in any given fiscal year is available without regard to fiscal years, for expenditure by the state board in accordance with the provisions of this article. The next unencumbered five hundred thousand dollars (\$500,000), or any portion thereof, deposited in any given fiscal year, is available for expenditure by the state board for the purposes of this article, subject to the provisions set forth in Section 28 of the Budget Act of 1984 (Chapter 258 of the Statutes of 1984). The next unencumbered one million dollars (\$1,000,000) deposited in the account in any given fiscal year is available for expenditure by the state board for the purposes of Section 13443. The remaining unencumbered funds deposited in the account in any given fiscal year is available without regard to fiscal years to the state board for expenditure for the purposes set forth in Section 13442.

13441.5. Loans from fund to account

The State Treasurer, when requested by the state board and approved by the Director of Finance, shall transfer moneys in the nature of a loan from the State Water Quality Control Fund to the account created pursuant to Section 13440, which shall be repayable from the account to such fund; provided, that the moneys transferred from the fund to the account shall not exceed the sum of twenty-five thousand dollars (\$25,000) at any one time.

13442. Use of monies to assist in clean-up

Upon application by a public agency with authority to clean up a waste or abate the effects thereof, the state board may order moneys to be paid from the account to the agency to assist it in cleaning up the waste or abating its effects on waters of the state. The agency shall not become liable to the state board for repayment of such moneys, but this shall not be any defense to an action brought pursuant to subdivision (b) of Section 13304 for the recovery of moneys paid hereunder.

13443. Use of money for unforeseen water pollution

Upon application by a regional board that is attempting to remedy a significant unforeseen water pollution problem, posing an actual or potential public health threat, and for which the regional board does not have adequate resources budgeted, the state board may order moneys to be paid from the account to the regional board to assist it in responding to the problem.

Chapter 7 Reclamation

Article 1. Title

13500. Title

This chapter shall be known as and may be cited as the Water Recycling Law.

Article 2. Legislative Findings and Intent

13510. Public interest

It is hereby declared that the people of the state have a primary interest in the development of facilities to recycle water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state.

13511. Findings

The Legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial use of recycled water. The Legislature further finds and declares that the utilization of recycled water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife purposes will contribute to the peace, health, safety and welfare of the people of the state. Use of recycled water constitutes the development of "new basic water supplies" as that term is used in Chapter 5 (commencing with Section 12880) of Part 6 of Division 6.

13512. Legislative intention

It is the intention of the Legislature that the state undertake all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the state.

Article 3. Financial Assistance

13515. Authority to loan

In order to implement the policy declarations of this chapter, the state board is authorized to provide loans for the development of water reclamation facilities, or for

studies and investigations in connection with water reclamation, pursuant to the provisions of Chapter 6 (commencing with Section 13400) of this division.

Article 4. Regulation

13520. Recycling criteria

As used in this article "recycling criteria" are the levels of constituents of recycled water, and means for assurance of reliability under the design concept which will result in recycled water safe from the standpoint of public health, for the uses to be made.

13521. DHS establishes recycling criteria

The State Department of Health Services shall establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health.

13522. Abatement by DHS or local health officer

(a) Whenever the State Department of Health Services or any local health officer finds that a contamination exists as a result of the use of recycled water, the department or local health officer shall order the contamination abated in accordance with the procedure provided for in Chapter 6 (commencing with Section 5400) of Part 3 of Division 5 of the Health and Safety Code.

(b) The use of recycled water in accordance with the uniform statewide recycling criteria established pursuant to Section 13521, for the purpose of this section, does not cause, constitute, or contribute to, any form of contamination, unless the department or the regional board determines that contamination exists.

13522.5. Reports

(a) Except as provided in subdivision (e), any person recycling or proposing to recycle water, or using or proposing to use recycled water, within any region for any purpose for which recycling criteria have been established, shall file with the appropriate regional board a report containing information required by the regional board.

(b) Except as provided in subdivision (e), every person recycling water or using recycled water shall file with the appropriate regional board a report of any material change or proposed change in the character of the recycled water or its use.

(c) Each report under this section shall be sworn to, or submitted under penalty of perjury.

(d) This section shall not be construed so as to require any report in the case of any producing, manufacturing, or processing operation involving the recycling of water solely for use in the producing, manufacturing, or processing operation.

(e) Except upon the written request of the regional board, a report is not required pursuant to this section from any user of recycled water which is being supplied by a supplier or distributor for whom a master recycling permit has been issued pursuant to Section 13523.1.

13522.6. Failure to report

Any person failing to furnish a report under Section 13522.5 when so requested by a regional board is guilty of a misdemeanor.

13522.7. Injunction

The Attorney General, at the request of the regional board, shall petition the superior court for the issuance of a temporary restraining order, temporary injunction or permanent injunction, or combination thereof, as may be appropriate, requiring any person not complying with Section 13522.5 to comply forthwith.

13523. DHS recommendation requirement

(a) Each regional board, after consulting with and receiving the recommendations of the State Department of Health Services and any party who has requested in writing to be consulted, and after any necessary hearing, shall, if in the judgment of the board, it is necessary to protect the public health, safety, or welfare, prescribe water reclamation requirements for water which is used or proposed to be used as reclaimed water.

(b) The requirements may be placed upon the person reclaiming water, the user, or both. The requirements shall be established in conformance with the uniform statewide reclamation criteria established pursuant to Section 13521. The regional board may require the submission of a preconstruction report for the purpose of determining compliance with the uniform statewide reclamation criteria. The requirements for a use of reclaimed water not addressed by the uniform statewide reclamation criteria shall be considered on a case-by-case basis.

13523.1. Master permit requirements

(a) Each regional board, after consulting with, and receiving the recommendations of, the State Department of Health Services and any party who has requested in writing to be consulted, with the consent of the proposed permittee, and after any necessary hearing, may, in lieu of issuing waste discharge requirements pursuant to Section 13263 or water reclamation requirements pursuant to Section 13523 for a user of reclaimed water, issue a master reclamation permit to a supplier or distributor, or both, of reclaimed water.

(b) A master reclamation permit shall include, at least, all of the following:

(1) Waste discharge requirements, adopted pursuant to Article 4 (commencing with Section 13260) of Chapter 4.

(2) A requirement that the permittee comply with the uniform statewide reclamation criteria established pursuant to Section 13521. Permit conditions for a use of reclaimed water not addressed by the uniform statewide water reclamation criteria shall be considered on a case-by-case basis.

(3) A requirement that the permittee establish and enforce rules or regulations for reclaimed water users, governing the design and construction of reclaimed water use facilities and the use of reclaimed water, in accordance with the uniform statewide reclamation criteria established pursuant to Section 13521.

(4) A requirement that the permittee submit a quarterly report summarizing reclaimed water use, including the total amount of reclaimed water supplied, the total number of reclaimed water use sites, and the locations of those sites, including the names of the hydrologic areas underlying the reclaimed water use sites.

(5) A requirement that the permittee conduct periodic inspections of the facilities of the reclaimed water users to monitor compliance by the users with the uniform statewide reclamation criteria established pursuant to Section 13521 and the requirements of the master reclamation permit.

(6) Any other requirements determined to be appropriate by the regional board.

13523.5. Salinity exception

A regional board may not deny issuance of water reclamation requirements to a project which violates only a salinity standard in the basin plan.

13524. Establishment of criteria

No person shall recycle water or use recycled water for any purpose for which recycling criteria have been established until water recycling requirements have been established pursuant to this article or a regional board determines that no requirements are necessary.

13525. TRO and injunction

Upon the refusal or failure of any person or persons recycling water or using recycled water to comply with the provisions of this article, the Attorney General, at the request of the regional board, shall petition the superior court for the issuance of a temporary restraining order, preliminary injunction, or permanent injunction, or combination thereof, as may be appropriate, prohibiting forthwith any person or persons from violating or threatening to violate the provisions of this article.

13525.5. Violation

Any person recycling water or using recycled water in violation of Section 13524, after such violation has been called to his attention in writing by the regional board, is guilty of a misdemeanor. Each day of such recycling or use shall constitute a separate offense.

13526. Misdemeanor

Any person who, after such action has been called to his attention in writing by the regional board, uses recycled water for any purpose for which recycling criteria have been established prior to the establishment of water recycling requirements, is guilty of a misdemeanor.

13527. Priority in financial assistance

(a) In administering any statewide program of financial assistance for water pollution or water quality control which may be delegated to it pursuant to Chapter 6 (commencing with Section 13400) of this division, the state board shall give added consideration to water quality control facilities providing optimum water recycling and use of recycled water.

(b) Nothing in this chapter prevents the appropriate regional board from establishing waste discharge requirements if a discharge is involved.

13528. DHS powers

No provision of this chapter shall be construed as affecting the existing powers of the State Department of Health Services.

13529. Unauthorized discharges of recycled water

The Legislature hereby finds and declares all of the following:

- (a) The purpose of Section 13529.2 is to establish notification requirements for unauthorized discharges of recycled water to waters of the state.
- (b) It is the intent of the Legislature in enacting this section to promote the efficient and safe use of recycled water.
- (c) The people of the state have a primary interest in the development of facilities to recycle water to supplement existing water supplies and to minimize the impacts of growing demand for new water on sensitive natural water bodies.
- (d) A substantial portion of the future water requirements of the state may be economically met by the beneficial use of recycled water.
- (e) The Legislature has established a statewide goal to recycle 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010.
- (f) The use of recycled water has proven to be safe and the State Department of Health Services is drafting regulations to provide for expanded uses of recycled water.

13529.2. Requirements if unauthorized discharge occurs

(a) Any person who, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water, as defined in subdivision (c), or 1,000 gallons or more of recycled water, as defined in subdivision (d), in or on any waters of the state, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as

- (1) that person has knowledge of the discharge,
- (2) notification is possible, and

(3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the appropriate regional board.

(b) For the purposes of this section, an unauthorized discharge means a discharge not authorized by waste discharge requirements pursuant to Article 4 of Chapter 4 (commencing with Section 13260), water reclamation requirements pursuant to Section 13523, a master reclamation permit pursuant to Section 13523.1, or any other provision of this division.

(c) For the purposes of this section, "recycled water" means wastewater treated as "disinfected tertiary 2.2 recycled water," as defined or described by the State Department of Health Services or wastewater receiving advanced treatment beyond disinfected tertiary 2.2 recycled water.

(d) For purposes of this section, "recycled water" means "recycled water," as defined in subdivision (n) of Section 13050, which is treated at a level less than "disinfected tertiary 2.2 recycled water," as defined or described by the State Department of Health Services.

(e) The requirements in this section supplement, and shall not supplant, any other provisions of law.

13529.4. Penalties

(a) Any person refusing or failing to provide the notice required by Section 13529.2, or as required by a condition of waste discharge requirements requiring notification of unauthorized releases of recycled water as defined in Section 13529.2, may be subject to administrative civil liability in an amount not to exceed the following:

(1) For the first violation, or a subsequent violation occurring more than 365 days from a previous violation, five thousand dollars (\$5,000).

(2) For a second violation occurring within 365 days of a previous violation, ten thousand dollars (\$10,000).

(3) For a third or subsequent violation occurring within 365 days of a previous violation, twenty-five thousand dollars (\$25,000).

(b) The penalties in this section supplement, and shall not supplant, any other provisions of law.

Article 5. Surveys and Investigations

13530. Duties of the department

The department, either independently or in cooperation with any person or any county, state, federal, or other agency, or on request of the state board, to the extent funds are allocated therefor, shall conduct surveys and investigations relating to the reclamation of water from waste pursuant to Section 230.

Article 6 Waste Water Regulation

13540. DHS authority for findings and regulations

No person shall construct, maintain or use any waste well extending to or into a subterranean water-bearing stratum that is used or intended to be used as, or is suitable for, a source of water supply for domestic purposes. Notwithstanding the foregoing, when a regional board finds that water quality considerations do not preclude controlled recharge of such stratum by direct injection, and when the State Department of Health Services, following a public hearing, finds the proposed recharge will not impair the quality of water in the receiving aquifer as a source of water supply for domestic purposes, recycled water may be injected by a well into such stratum. The State Department of Health Services may make and enforce such regulations pertaining thereto as it deems proper. Nothing in this section shall be construed to affect the authority of the state board or regional boards to prescribe and enforce requirements for such discharge.

13541. Waste well

As used in this article, "waste well" includes any hole dug or drilled into the ground, used or intended to be used for the disposal of waste.

Article 7. Waste Water Reuse

13550. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by

the state board, after notice to any person or entity who may be ordered to use recycled water or to cease using potable water and a hearing held pursuant to Article 2 (commencing with Section 648) of Chapter 1.5 of Division 3 of Title 23 of the California Code of Regulations:

(1) The source of recycled water is of adequate quality for these uses and is available for these uses. In determining adequate quality, the state board shall consider all relevant factors, including, but not limited to, food and employee safety, and level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. In addition, the state board shall consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits.

(2) The recycled water may be furnished for these uses at a reasonable cost to the user. In determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water.

(3) After concurrence with the State Department of Health Services, the use of recycled water from the proposed source will not be detrimental to public health.

(4) The use of recycled water for these uses will not adversely affect downstream water rights, will not degrade water quality, and is determined not to be injurious to plantlife, fish, and wildlife.

(b) In making the determination pursuant to subdivision (a), the state board shall consider the impact of the cost and quality of the nonpotable water on each individual user.

(c) The state board may require a public agency or person subject to this article to furnish information which the state board determines to be relevant to making the determination required in subdivision (a).

13551. Industry and irrigation for restricted use of potable water prohibited: use of recycled water

A person or public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, shall not use water from any

source of quality suitable for potable domestic use for nonpotable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses if suitable recycled water is available as provided in Section 13550; however, any use of recycled water in lieu of water suitable for potable domestic use shall, to the extent of the recycled water so used, be deemed to constitute a reasonable beneficial use of that water and the use of recycled water shall not cause any loss or diminution of any existing water right.

13552. Restrictions on Sections 13550 and 13551

The amendments to Sections 13550 and 13551 of the Water Code made during the first year of the 1991-92 Regular Session are not intended to alter any rights, remedies, or obligations which may exist prior to January 1, 1992, pursuant to, but not limited to, those sections or Chapter 8.5 (commencing with Section 1501) of Part 1 of Division 1 of the Public Utilities Code.

13552.2. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for the irrigation of residential landscaping is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for this use, is available to the residents and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

13552.4. Authority to require use of recycled water for residential landscaping

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for irrigation of residential landscaping, if all of the following requirements are met:

(1) Recycled water, for this use, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The irrigation systems are constructed in accordance with Chapter 3 (commencing with Section 60301) of Division 4 of Title 22 of the California Code Regulations.

(b) This section applies to both of the following:

(1) New subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1994, for which the State Department of Health Services has approved the use of recycled water.

(2) Any residence that is retrofitted to permit the use of recycled water for landscape irrigation and for which the State Department of Health Services has approved the use of recycled water.

(c) (1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water for irrigation of residential landscaping necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

13552.6. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for floor trap priming, cooling towers, and air-conditioning devices is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user, and the water meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

13552.8. Recycled water for floor trap priming, cooling towers, and air-conditioning

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water in floor

trap priming, cooling towers, and air-conditioning devices, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) If public exposure to aerosols, mist, or spray may occur, appropriate mist mitigation or mist control is provided, such as the use of mist arrestors or the addition of biocides to the water in accordance with criteria established pursuant to Section 13521.

(4) The person intending to use recycled water has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the public agency, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies to both of the following:

(1) New industrial facilities and subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1994, for which the State Department of Health Services has approved the use of recycled water.

(2) Any structure that is retrofitted to permit the use of recycled water for floor traps, cooling towers, or air-conditioning devices, for which the State Department of Health Services has approved the use of recycled water.

(c) (1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water for floor trap priming, cooling towers, or air-conditioning devices necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

13553. Legislative findings

(a) The Legislature hereby finds and declares that the use of potable domestic water for toilet and urinal flushing in structures is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to furnish whatever information may be relevant to making the determination required in subdivision (a).

(c) For the purposes of this section and Section 13554, "structure" or "structures" means commercial, retail, and office buildings, theaters, auditoriums, schools, hotels, apartments, barracks, dormitories, jails, prisons, and reformatories, and other structures as determined by the State Department of Health Services.

(d) Nothing in this section or Section 13554 applies to a pilot program adopted pursuant to Section 13553.1.

13553.1. Legislative findings

(a) The Legislature hereby finds and declares that certain coastal areas of the state have been using sea water to flush toilets and urinals as a means of conserving potable water; that this practice precludes the beneficial reuse of treated wastewater and has had a deleterious effect on the proper wastewater treatment process, and has led to corrosion of the sea water distribution pipelines and wastewater collection systems; and that this situation must be changed.

(b) There is a need for a pilot program to demonstrate that conversion to the use of recycled water in residential buildings for toilet and urinal flushing does not pose a threat to public health and safety.

(c) A city that is providing a separate distribution system for sea water for use in flushing toilets and urinals in residential structures may, by ordinance, authorize the use of recycled water for the flushing of toilets and urinals in residential structures if the level of treatment and the use of the recycled water meets the criteria set by the State Department of Health Services.

13554. Recycled water for toilet and urinal flushing

(a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for toilet and urinal flushing in structures, except a mental hospital or other facility operated by a public agency for the treatment of persons with mental disorders, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The public agency has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the use site, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies only to either of the following:

(1) New structures for which the building permit is issued on or after March 15, 1992, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1992.

(2) Any construction pursuant to subdivision (a) for which the State Department of Health Services has, prior to January 1, 1992, approved the use of recycled water.

(c) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water by a structure necessary to comply with a requirement issued by a public agency under subdivision (a). This exemption does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

13554.2. DHS fees

(a) Any person or entity proposing the use of recycled water shall reimburse the State Department of Health Services for reasonable costs that department actually incurs in performing duties pursuant to this chapter.

(b) (1) Upon a request from the person or entity proposing the use of recycled water, the State Department of Health Services shall, within a reasonable time after the receipt of the request, provide an estimate of the costs that it will reasonably incur in the performance of its duties pursuant to this chapter.

(2) For purposes of implementing subdivision (a), that department shall maintain a record of its costs. In determining those costs, that department may consider costs that include, but are not limited to, costs relating to personnel requirements, materials, travel, and office overhead. The amount of reimbursement shall be equal to, and may not exceed, that department's actual costs.

(c) With the consent of the person or entity proposing the use of recycled water, the State Department of Health Services may delegate all or part of the duties that department performs pursuant to this chapter within a county to a local health agency authorized by the board of supervisors to assume these duties, if, in the judgment of that department, the local health agency can perform these duties. Any person or entity proposing the use of recycled water shall reimburse the local health agency for reasonable costs that the local health agency actually incurs in the performance of its duties delegated pursuant to this subdivision.

(d) (1) Upon a request from the person or entity proposing the use of recycled water, the local health agency shall, within a reasonable time after the receipt of the request, provide an estimate of the cost it will reasonably incur in the performance of its duties delegated under subdivision (c).

(2) The local health agency, if delegated duties pursuant to subdivision (c), shall maintain a record of its costs that include, but is not limited to, costs relating to personnel requirements, materials, travel, and office overhead. The amount of reimbursement shall be equal to, and may not exceed, the local health agency's actual costs.

(e) The State Department of Health Services or local health agency shall complete its review of a proposed use of recycled water within a reasonable period of time. That department shall submit to the person or entity proposing the use of recycled water a written determination as to whether the proposal submitted is complete for purposes of review within 30 days from the date of receipt of the proposal and shall approve or disapprove the proposed use within 30 days from the date on which that department determines that the proposal is complete.

(f) An invoice for reimbursement of services rendered shall be submitted to the person or entity proposing the use of recycled water subsequent to completion of review of the

proposed use, or other services rendered, that specifies the number of hours spent by the State Department of Health Services or local health agency, specific tasks performed, and other costs actually incurred. Supporting documentation, including receipts, logs, timesheets, and other standard accounting documents, shall be maintained by that department or local health agency and copies, upon request, shall be provided to the person or entity proposing the use of recycled water.

(g) For the purposes of this section, "person or entity proposing the use of recycled water" means the producer or distributor of recycled water submitting a proposal to the department.

13554.3. State Board fees

The State Water Resources Control Board may establish a reasonable schedule of fees by which it is reimbursed for the costs it incurs pursuant to Sections 13553 and 13554.

13555.2. Legislative intent

The Legislature hereby finds and declares that many local agencies deliver recycled water for nonpotable uses and that the use of recycled water is an effective means of meeting the demands for new water caused by drought conditions or population increases in the state. It is the intent of the Legislature to encourage the design and construction of water delivery systems on private property that deliver water for both potable and nonpotable uses in separate pipelines.

13555.3. Separate pipelines

(a) Water delivery systems on private property that could deliver recycled water for nonpotable uses described in Section 13550, that are constructed on and after January 1, 1993, shall be designed to ensure that the water to be used for only potable domestic uses is delivered, from the point of entry to the private property to be served, in a separate pipeline which is not used to deliver the recycled water.

(b) This section applies to water delivery systems on private property constructed within either of the following jurisdictions:

(1) One that has an urban water management plan that includes the intent to develop recycled water use.

(2) One that does not have an urban water management plan that includes recycled water use, but that is within five miles of a jurisdiction that does have an

urban water management plan that includes recycled water use, and has indicated a willingness to serve the water delivery system.

(c) This section does not preempt local regulation of the delivery of water for potable and nonpotable uses and any local governing body may adopt requirements which are more restrictive than the requirements of this section.

13556. Acquisition and provision of recycled water for beneficial use

In addition to any other authority provided in law, any water supplier described in subdivision (b) of Section 1745 may acquire, store, provide, sell, and deliver recycled water for any beneficial use, including, but not limited to, municipal, industrial, domestic, and irrigation uses, if the water use is in accordance with statewide recycling criteria and regulations established pursuant to this chapter.

Chapter 7.5. Water Recycling Act of 1991

13575. Recycling Act title

(a) This chapter shall be known and may be cited as the Water Recycling Act of 1991.

(b) As used in this chapter, the following terms have the following meanings:

(1) "Customer" means a person or entity that purchases water from a retail water supplier.

(2) "Entity responsible for groundwater replenishment" means any person or entity authorized by statute or court order to manage a groundwater basin and acquire water for groundwater replenishment.

(3) "Recycled water" has the same meaning as defined in subdivision (n) of Section 13050.

(4) "Recycled water producer" means any local public entity that produces recycled water.

(5) "Recycled water wholesaler" means any local public entity that distributes recycled water to retail water suppliers and which has constructed, or is constructing, a recycled water distribution system.

(6) "Retail water supplier" means any local entity, including a public agency, city, county, or private water company, that provides retail water service.

(7) "Retailer" means the retail water supplier in whose service area is located the property to which a customer requests the delivery of recycled water service.

13576. Legislative findings

The Legislature hereby makes the following findings and declarations:

(a) The State of California is subject to periodic drought conditions.

(b) The development of traditional water resources in California has not kept pace with the state's population, which is growing at the rate of over 700,000 per year and which is anticipated to reach 36 million by the year 2010.

(c) There is a need for a reliable source of water for uses not related to the supply of potable water to protect investments in agriculture, greenbelts, and recreation and to replenish groundwater basins, and protect and enhance fisheries, wildlife habitat, and riparian areas.

(d) The environmental benefits of recycled water include a reduced demand for water in the Sacramento-San Joaquin Delta which is otherwise needed to maintain water quality, reduced discharge of waste into the ocean, and the enhancement of groundwater basins, recreation, fisheries, and wetlands.

(e) The use of recycled water has proven to be safe from a public health standpoint, and the State Department of Health Services is updating regulations for the use of recycled water.

(f) The use of recycled water is a cost-effective, reliable method of helping to meet California's water supply needs.

(g) The development of the infrastructure to distribute recycled water will provide jobs and enhance the economy of the state.

(h) Retail water suppliers and recycled water producers and wholesalers should promote the substitution of recycled water for potable water and imported water in order to maximize the appropriate cost-effective use of recycled water in California.

(i) Recycled water producers, retail water suppliers, and entities responsible for groundwater replenishment should cooperate in joint technical, economic, and

environmental studies, as appropriate, to determine the feasibility of providing recycled water service.

(j) Retail water suppliers and recycled water producers and wholesalers should be encouraged to enter into contracts to facilitate the service of recycled and potable water by the retail water suppliers in their service areas in the most efficient and cost-effective manner

(k) Recycled water producers and wholesalers and entities responsible for groundwater replenishment should be encouraged to enter into contracts to facilitate the use of recycled water for groundwater replenishment if recycled water is available and the authorities having jurisdiction approve its use.

(l) Wholesale prices set by recycled water producers and recycled water wholesalers, and rates that retail water suppliers are authorized to charge for recycled water, should reflect an equitable sharing of the costs and benefits associated with the development and use of recycled water.

13577. Water recycling goal

This chapter establishes a statewide goal to recycle a total of 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010.

13579. Identification of potential uses

(a) In order to achieve the goals established in Section 13577, retail water suppliers shall identify potential uses for recycled water within their service areas, potential customers for recycled water service within their service areas, and, within a reasonable time, potential sources of recycled water.

(b) Recycled water producers and recycled water wholesalers may also identify potential uses for recycled water, and may assist retail water suppliers in identifying potential customers for recycled water service within the service areas of those retail water suppliers.

(c) Recycled water producers, retail water suppliers, and entities responsible for groundwater replenishment may cooperate in joint technical, economic, and environmental studies, as appropriate, to determine the feasibility of providing recycled water service and recycled water for groundwater replenishment consistent with the criteria set forth in paragraphs (1) to (3), inclusive, of subdivision (a) of Section 13550 and in accordance with Section 60320 of Title 22 of the California Code of Regulations.

13580. Application for recycled water supply

(a) A retail water supplier that has identified a potential use or customer pursuant to Section 13579 may apply to a recycled water producer or recycled water wholesaler for a recycled water supply.

(b) A recycled water producer or recycled water wholesaler that has identified a potential use or customer pursuant to Section 13579 may, in writing, request a retail water supplier to enter into an agreement to provide recycled water to the potential customer.

(c) A customer may request, in writing, a retailer to enter into an agreement to provide recycled water to the customer.

(d) (1) An entity responsible for groundwater replenishment that is a customer of a retail water supplier and that has identified the potential use of recycled water for groundwater replenishment purposes may, in writing, request that retail water supplier to enter into an agreement to provide recycled water for that purpose. That entity may not obtain recycled water for that purpose from a recycled water producer, a recycled water wholesaler, or another retail water supplier without the agreement of the entity's retail water supplier.

(2) An entity responsible for groundwater replenishment that is not a customer of a retail water supplier and that has identified the potential use of recycled water for groundwater replenishment purposes may, in writing, request a retail water supplier, a recycled water producer, or a recycled water wholesaler to enter into an agreement to provide recycled water for that purpose.

13580.5. Agreements

(a) (1) Subject to subdivision (e) of Section 13580.7, a retail water supplier that receives a request from a customer pursuant to subdivision (c) of Section 13580 shall enter into an agreement to provide recycled water, if recycled water is available, or can be made available, to the retail water supplier for sale to the customer.

(2) Notwithstanding paragraph (1), in accordance with a written agreement between a recycled water producer or a recycled water wholesaler and a retail water supplier, the retail water supplier may delegate to a recycled water producer or a recycled water wholesaler its responsibility under this section to provide recycled water.

(b) A customer may not obtain recycled water from a recycled water producer, a recycled water wholesaler, or a retail water supplier that is not the retailer without the agreement of the retailer.

(c) If either a recycled water producer or a recycled water wholesaler provides a customer of a retail water supplier with a written statement that it can and will provide recycled water to the retailer, the retail water supplier shall, not later than 120 days from the date on which the retail water supplier receives the written statement from the customer, by certified mail, return receipt requested, submit a written offer to the customer. A determination of availability pursuant to Section 13550 is not required.

(d) If the state board pursuant to Section 13550 makes a determination that there is available recycled water to serve a customer of a retail water supplier, the retail water supplier, not later than 120 days from the date on which the retail water supplier receives a copy of that determination from the customer, by certified mail, return receipt requested, shall submit a written offer to the customer.

13580.7. Public Agency Retail Water Suppliers

(a) This section applies only to a retail water supplier that is a public agency.

(b) A customer may request, in writing, a retail water supplier to enter into an agreement or adopt recycled water rates in order to provide recycled water service to the customer. The retail water supplier, by certified mail return receipt requested, shall submit a written offer to the customer not later than 120 days from the date on which the retail water supplier receives the written request from the customer.

(c) If no rate is in effect for recycled water service within the service area of a retail water supplier, the rate and conditions for recycled water service shall be established by contract between the retail water supplier and the customer, not later than 120 days from the date on which the customer requests a contract, or, by resolution or ordinance by the retail water supplier, not later than 120 days from the date on which the retail water supplier receives the customer's written request for an ordinance or resolution.

(d) A rate for recycled water service established by contract, ordinance, or resolution, shall reflect a reasonable relationship between the amount of the rate and the retail cost of obtaining or producing the recycled water, the cost of conveying the recycled water, and overhead expenses for providing recycled water service. Capital costs of facilities required to serve the customer shall be amortized over the economic life of the facility, or the length of time the customer agrees to purchase recycled water, whichever is less. The rate shall not exceed the estimated reasonable cost of providing the service, and

any additional costs agreed to by the customer for recycled water supplemental treatment.

(e) The rate for recycled water shall be comparable to, or less than, the retail water supplier's rate for potable water. If recycled water service cannot be provided at a rate comparable to, or less than, the rate for potable water, the retail water supplier is not required to provide the recycled water service, unless the customer agrees to pay a rate that reimburses the retail water supplier for the costs described in subdivision (c).

(f) The offer required by subdivisions (c) and (d) of Section 13580.5 shall identify all of the following:

- (1) The source for the recycled water.
- (2) The method of conveying the recycled water.
- (3) A schedule for delivery of the recycled water.
- (4) The terms of service.
- (5) The rate for the recycled water, including the per-unit cost for that water.
- (6) The costs necessary to provide service and the basis for determining those costs.

(g) This section does not apply to recycled water service rates established before January 1, 1999, or any amendments to those rates.

13580.8. Retail water supplier regulated by the PUC

(a) This section applies only to a retail water supplier that is regulated by the Public Utilities Commission.

(b) Rates for recycled water that is provided to the customer by a retail water supplier regulated by the Public Utilities Commission shall be established by the commission pursuant to Section 455.1 of the Public Utilities Code. A regulated water utility may request the commission to establish the rate or rates for the delivery of recycled or nonpotable water, with the objective of providing, where practicable, a reasonable economic incentive for the customer to purchase recycled or nonpotable water in place of potable water.

(c) A regulated water utility may propose a rate or rates for recycled or nonpotable water by tariff or by contract between the retail water supplier and the customer. Where the rate or rates are set by contract, the water utility and its customer shall meet, confer, and negotiate in good faith to establish a contract rate.

(d) The commission shall, as appropriate, provide a discount from the general metered rate of the water utility for potable water by either of the following means:

(1) Passing through to the customer the net reduction in cost to the water utility in purchasing and delivering recycled or nonpotable water as compared to the cost of purchasing and delivering potable water. (2) Granting to the customer a uniform discount from the water utility's general metered potable water rate when the discount in paragraph (1) is determined to be an insufficient incentive for the customer to convert to the use of recycled or nonpotable water. If the commission provides for a discount pursuant to this paragraph that is greater than the water utility's reduction in cost, the commission shall authorize the water utility to include the aggregate amount of that discount in its revenue requirements to be applied to, and recovered in, rates that are applicable to all general metered customers.

13580.9. City of West Covina

(a) Notwithstanding any other provision of law, and except as otherwise previously provided for in a contract agreed to by the customer and the City of West Covina, if the purchaser, contractor, or lessee of, or successor to, all or a portion of the water utility owned by the City of West Covina is a retail water supplier that is regulated by the Public Utilities Commission, rates for recycled or nonpotable water service to a closed hazardous waste and solid waste facility located within the boundaries of the City of West Covina for the purposes of irrigation, recreation, or dust suppression or any other use at that facility shall be established in accordance with subdivisions (a) to (e), inclusive, of Section 13580.7, and if there is a failure to agree on the terms and conditions of a recycled or nonpotable water supply agreement for the delivery of water for those purposes by that purchaser, contractor, lessee, or successor, Section 13581 shall apply.

(b) For the purpose of this section, nonpotable water that is not the result of the treatment of waste shall be treated as the equivalent of recycled water if it is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource, if the use of that water will not adversely affect downstream water rights, degrade water quality, or be injurious to plant life, fish, or wildlife, as provided by statute or by regulations of the State Department of Health Services and the state board or a regional board, as appropriate.

13581. Formal mediation process

(a) If there is a failure to agree on terms and conditions of a recycled water supply agreement involving a retail water supplier that is a public agency within 180 days from the date of the receipt of a request for recycled water pursuant to subdivision (c) of Section 13580, a written statement pursuant to subdivision (c) of Section 13580.5, or a determination of availability pursuant to subdivision (d) of Section 13580.5, any party may request a formal mediation process. The parties shall commence mediation within 60 days after the mediation request is made. If the parties cannot agree on a mediator, the director shall appoint a mediator. The mediator may recommend to the parties appropriate terms and conditions applicable to the service of recycled water. The cost for the services of the mediator shall be divided equally among the parties to the mediation and shall not exceed twenty thousand dollars (\$20,000).

(b) If the parties in mediation reach agreement, both parties together shall draft the contract for the recycled water service. The parties shall sign the contract within 30 days.

(c) If the parties in mediation fail to reach agreement, the affected retail water supplier shall, within 30 days, by resolution or ordinance, adopt a rate for recycled water service. The agency action shall be subject to validating proceedings pursuant to Chapter 9 (commencing with Section 860) of Part 2 of Title 10 of the Code of Civil Procedure, except that there shall not be a presumption in favor of the retail water supplier under the action taken to set the rate for recycled water service. The mediator shall file a report with the superior court setting forth the recommendations provided to the parties regarding appropriate terms and conditions applicable to the service of recycled water. Each party shall bear its own costs and attorney's fees.

13581.2. Process for a retail water supplier regulated by the PUC

If the retail water supplier is regulated by the Public Utilities Commission, and there is a failure to agree on terms and conditions of a recycle water supply agreement with a customer within 180 days from the date of the receipt of a request for recycled water pursuant to subdivision (c) of Section 13580, a written statement pursuant to subdivision (c) of Section 13580.5, or a determination of availability pursuant to subdivision (d) of Section 13580.5, the matter shall be submitted to the Public Utilities Commission for resolution, and the commission shall determine a contract rate or rates for recycled water as provided in Section 13580.8.

13582. Construction of chapter

This chapter is not intended to alter either of the following:

(a) Any rights, remedies, or obligations which may exist pursuant to Article 1.5 (commencing with Section 1210) of Chapter 1 of Part 2 of Division 2 of this code or Chapter 8.5 (commencing with Section 1501) of Part 1 of Division 1 of the Public Utilities Code.

(b) Any rates established or contracts entered into prior to January 1, 1999.

13583. Noncompliance

(a) If a retail water supplier that is a public agency does not comply with this chapter, the customer may petition a court for a writ of mandate pursuant to Chapter 2 (commencing with Section 1084) of Title 1 of Part 3 of the Code of Civil Procedure.

(b) If a retail water supplier is regulated by the Public Utilities Commission and does not comply with this chapter, the Public Utilities Commission may order the retailer to comply with this chapter after receiving a petition from the customer specifying the provisions of this chapter with which the retailer has failed to comply.

Chapter 22. Graywater for Home Irrigation

14875. Application of chapter

This chapter applies to the construction, installation, or alteration of graywater systems for subsurface irrigation and other safe uses.

14875.1. Department Definition

"Department" means the Department of Water Resources.

14876. Graywater definition

"Graywater" means untreated wastewater which has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and which does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs but does not include wastewater from kitchen sinks or dishwashers.

14877. Graywater system definition

"Graywater system" means a system and devices, attached to the plumbing system for the sanitary distribution or use of graywater.

14877.1. Consultation with DHS on standards

(a) On or before January 1, 1997, the department, in consultation with the State Department of Health Services and the Center for Irrigation Technology at California State University, Fresno, shall adopt standards for the installation of graywater systems. In adopting these standards, the department shall consider, among other resources, "Appendix J," as adopted on September 29, 1992, by the International Association of Plumbing and Mechanical Officials, the graywater standard proposed for the latest edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, the City of Los Angeles Graywater Pilot Project Final Report issued in November 1992, and the advice of the Center for Irrigation Technology at California State University, Fresno, on the installation depth for subsurface drip irrigation systems.

(b) The department shall include among the approved methods of subsurface irrigation, but shall not be limited to, drip systems.

(c) The department shall revise its graywater systems standards as needed.

14877.2. Local administration

A graywater system may be installed if the city or county having jurisdiction over the installation determines that the system complies with standards adopted by the department.

14877.3. City or county—more stringent

After a public hearing, a city or county may adopt, by ordinance, standards that prohibit the use of graywater or standards that are more restrictive than the standards adopted by the department, as appropriate for the local area.

Title 22 Code of Regulations

DIVISION 4. ENVIRONMENTAL HEALTH CHAPTER 1. INTRODUCTION

ARTICLE 1. DEFINITIONS

60001. Department

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

60003. Director

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

CHAPTER 2. REGULATIONS FOR THE IMPLEMENTATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

ARTICLE 1. GENERAL REQUIREMENTS AND CATEGORICAL EXEMPTIONS

60100. General requirements

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

60101. Specific activities within categorical exempt classes

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

- (a) Class 1: Existing Facilities.

- (1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.
 - (2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.
- (b) Class 2: Replacement or Reconstruction.
- (1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.
 - (2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.
 - (3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.
- (c) Class 3: New Construction of Small Structures.
- (1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.
 - (2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.
- (d) Class 4: Minor Alterations to Land.
- (1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.
 - (2) Any minor alterations to highway crossings for water supply and distribution lines.

CHAPTER 3 WATER RECYCLING CRITERIA
ARTICLE 1 DEFINITIONS

60301. Definitions

60301.100. Approved laboratory

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

60301.160. Coagulated wastewater

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable flocc-forming chemicals.

60301.170. Conventional treatment

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

60301.200. Direct beneficial use

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

60301.220. Disinfected secondary-2.2 recycled water

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

60301.225. Disinfected secondary-23 recycled water

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100

milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

60301.230. Disinfected tertiary recycled water

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

(a) The filtered wastewater has been disinfected by either:

(1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or

(2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

(b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

60301.240. Drift

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

60301.245. Drift eliminator

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

60301.250. Dual plumbed system

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

- (a) To serve plumbing outlets (excluding fire suppression systems) within a building or
- (b) Outdoor landscape irrigation at individual residences.

60301.300. F-Specific bacteriophage MS-2

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of *E. coli* (ATCC 15597).

60301.310. Facility

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

60301.320. Filtered wastewater

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

- (a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:
 - (1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and
 - (2) So that the turbidity of the filtered wastewater does not exceed any of the following:
 - (A) An average of 2 NTU within a 24-hour period;
 - (B) 5 NTU more than 5 percent of the time within a 24-hour period; and

(C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and

(2) 0.5 NTU at any time.

60301.330. Food crops

"Food crops" means any crops intended for human consumption.

60301.400. Hose bibb

"Hose bibb" means a faucet or similar device to which a common garden hose can be readily attached.

60301.550. Landscape impoundment

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

60301.600. Modal contact time

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

60301.620. Nonrestricted recreational impoundment

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

60301.630. NTU

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

60301.660. Peak dry weather design flow

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

60301.700. Recycled wateragency.

"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

60301.710. Recycling plant

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

60301.740. Regulatory Agency

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

60301.750. Restricted access golf course

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

60301.760. Restricted recreational impoundment

"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

60301.800. Spray irrigation

"Spray irrigation" means the application of recycled water to crops to maintain vegetation or support growth of vegetation by applying it from sprinklers.

Section 60301.830. Standby Unit Process.

"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

60301.900. Undisinfected secondary recycled water.

"Undisinfected secondary recycled water" means oxidized wastewater.

60301.920. Use area

"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

ARTICLE 2. SOURCES OF RECYCLED WATER.

60302. Source specifications.

The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

ARTICLE 3. USES OF RECYCLED WATER.

60303. Exceptions

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

60304. Use of recycled water for irrigation

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

- (1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,
- (2) Parks and playgrounds,
- (3) School yards,
- (4) Residential landscaping,
- (5) Unrestricted access golf courses, and
- (6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

- (1) Cemeteries,

- (2) Freeway landscaping,
 - (3) Restricted access golf courses,
 - (4) Ornamental nursery stock and sod farms where access by the general public is not restricted,
 - (5) Pasture for animals producing milk for human consumption, and
 - (6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard
- (d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:
- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
 - (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,
 - (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),
 - (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,
 - (5) Seed crops not eaten by humans,
 - (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
 - (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.
- (e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

(1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.

(2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

60306. Use of recycled water for cooling

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other micro-organisms.

60307. Use of recycled water for other purposes

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Flushing toilets and urinals,

(2) Priming drain traps,

(3) Industrial process water that may come into contact with workers,

(4) Structural fire fighting,

(5) Decorative fountains,

(6) Commercial laundries,

(7) Consolidation of backfill around potable water pipelines,

(8) Artificial snow making for commercial outdoor use, and

- (9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.
- (b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:
- (1) Industrial boiler feed,
 - (2) Nonstructural fire fighting,
 - (3) Backfill consolidation around nonpotable piping,
 - (4) Soil compaction,
 - (5) Mixing concrete,
 - (6) Dust control on roads and streets,
 - (7) Cleaning roads, sidewalks and outdoor work areas and
 - (8) Industrial process water that will not come into contact with workers.
- (c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

ARTICLE 4. USE AREA REQUIREMENTS.

60310. Use area requirements

- (a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:
- (1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - (2) The well contains an annular seal that extends from the surface into the aquitard.
 - (3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

- (4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - (5) The owner of the well approves of the elimination of the buffer zone requirement.
- (b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.
- (c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.
- (d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.
- (e) Any use of recycled water shall comply with the following:
- (1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.
 - (2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
 - (3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.
- (f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.
- (g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.



Water Recycling Criteria
FIGURE 60310-A

ARTICLE 5. DUAL PLUMBED RECYCLED WATER SYSTEMS.

60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual-plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

60314. Report submittal

(a) For dual-plumbed recycled water systems, the report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

(E) The specific use to be made of the recycled water at each facility.

(2) Plans and specifications describing the following:

(A) Proposed piping system to be used,

(B) Pipe locations of both the recycled and potable systems,

(C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and

(D) The methods and devices to be used to prevent backflow of recycled water into the public water system.

(3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

60315. Design requirements

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of title 17, California Code of Regulations, and the approval of the public water system has been obtained.

60316. Operation requirements

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection

control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

ARTICLE 5.1. GROUNDWATER RECHARGE

60320. Groundwater recharge

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

ARTICLE 5.5. OTHER METHODS OF TREATMENT

60320.5. Other methods of treatment

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

ARTICLE 6. SAMPLING AND ANALYSIS

60321. Sampling and analysis

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24-hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

ARTICLE 7. ENGINEERING REPORT AND OPERATIONAL REQUIREMENTS

60323. Engineering report

(a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

60325. Personnel

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

60327. Maintenance

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

60329. Operating records and reports

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

60331. Bypass

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

ARTICLE 8. GENERAL REQUIREMENTS OF DESIGN

60333. Flexibility of design

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

60335. Alarms

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

- (1) Loss of power from the normal power supply.
- (2) Failure of a biological treatment process.
- (3) Failure of a disinfection process.
- (4) Failure of a coagulation process.
- (5) Failure of a filtration process.
- (6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is

not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

60337. Power supply

The power supply shall be provided with one of the following reliability features:

- (a) Alarm and standby power source.
- (b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.
- (c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

ARTICLE 9. RELIABILITY REQUIREMENTS FOR PRIMARY EFFLUENT

60339. Primary treatment

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

ARTICLE 10. RELIABILITY REQUIREMENTS FOR FULL TREATMENT

60341. Emergency storage or disposal

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back

equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

60343. Primary treatment

All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Standby primary treatment unit process.

(c) Long-term storage or disposal provisions.

60345. Biological treatment

All biological treatment unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.

60347. Secondary sedimentation

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

- (a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.
- (b) Standby sedimentation unit process.
- (c) Long-term storage or disposal provisions.

60349. Coagulation

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

- (1) Standby feeders,
- (2) Adequate chemical stowage and conveyance facilities,
- (3) Adequate reserve chemical supply, and
- (4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

- (1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions, or
- (5) Alarm and standby coagulation process.

60351. Filtration

All filtration unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.
- (e) Alarm and standby filtration unit process.

Section 60353. Disinfection

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

- (1) Standby chlorine supply,
- (2) Manifold systems to connect chlorine cylinders,

- (3) Chlorine scales, and
- (4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

- (1) Alarm and standby chlorinator;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions; or
- (5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

Title 17 Code of Regulations

DIVISION 1. STATE DEPARTMENT OF HEALTH SERVICES
CHAPTER 5. SANITATION (ENVIRONMENTAL)
GROUP 4. DRINKING WATER SUPPLIES
ARTICLE 1. GENERAL

7583. Definitions

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter

- (a) "Approved Water Supply" is a water supply whose potability is regulated by a State of local health agency.
- (b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.
- (c) "Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.
- (d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).
- (e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.
- (f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.
- (g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.
- (h) "Local Health Agency" means the county or city health authority.

- (i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.
- (j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.
- (k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.
- (l) "Water Supplier" is the person who owns or operates the public water system.
- (m) "Water User" is any person obtaining water from a public water supply.

7584. Responsibility and scope of program

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

- (a) The adoption of operating rules or ordinances to implement the cross-connection program.
- (b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,
- (c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,
- (d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,
- (e) The establishment of a procedure or system for testing backflow preventers, and
- (f) The maintenance of records of locations, tests, and repairs of backflow preventers.

7585. Evaluation of hazard

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

- (a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.
- (b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.
- (c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.
- (d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.
- (e) Premises having a repeated history of cross-connections being established or re-established.

7586. User supervisor

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

ARTICLE 2. PROTECTION OF WATER SYSTEM

7601. Approval of backflow preventers

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

7602. Construction of backflow preventers

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

7603. Location of backflow preventers

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

7604. Type of protection required.

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP) and an Air gap Separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard, are given in Table 1. Situations not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

TABLE 1
 TYPE OF BACKFLOW PROTECTION REQUIRED

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP

(c) Recycled water

(1) Premises where the public water system is used to supplement the recycled water supply. AG

(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system. RP

(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a). DC

(d) Fire Protection Systems

(1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected). DC

(2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier. AG

(3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used. DC

(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building. DC

(e) Dockside Watering Points and Marine Facilities

(1) Pier hydrants for supplying water to vessels for any purpose. RP

(2) Premises where there are marine facilities. RP

(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist. RP

(g) Premises where there is a repeated history of cross-connections being established or re-established. RP

Section 7605. Testing and maintenance of backflow preventers

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

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5. Irrigation with Reclaimed Water- State Water Resources Control Board

Irrigation with reclaimed municipal wastewater: California experiences

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There are a number of factors which affect the implementation of municipal wastewater reclamation and reuse projects. Generally, the impetus for water reuse in industrialized countries has resulted from four motivating factors:

- 1. Increasing cost of freshwater development;*
- 2. Desirability of establishing comprehensive water resource planning, including water conservation and wastewater reuse;*
- 3. Availability of high quality effluents;*
- 4. Avoidance of more stringent water pollution control requirements such as needs for advanced wastewater treatment facilities.*

The general factors affecting wastewater reuse decisions include:

- 1. Local and regional water supply conditions;*
- 2. Water quality requirements for intended water reuse applications;*
- 3. Existing or proposed wastewater treatment facilities;*
- 4. Requirements for degree of treatment process reliability;*

5. Potential health risks mitigation and public acceptance; and

6. Financing reuse facilities including sale of reclaimed water.

Along with the facilities planning required for water pollution control projects, additional steps are usually necessary for wastewater reclamation and reuse projects because they involve primary benefits in the area of water supply. Although a wastewater reclamation and reuse project may be justified on the basis of the least-cost alternative to water pollution control projects, much of the effort in wastewater reclamation and reuse projects is focused on market assessment or actual marketing of reclaimed wastewater. Thus, the facilities planning process for wastewater reclamation and reuse should consist of the following steps:

- Preliminary market assessment*
- Engineering and economic analyses*
- Detailed market analyses and user contracts*
- Implementation plan including financial analyses.*

The planning steps should result in the development of a recommended facilities plan for a

given wastewater reclamation and reuse project. By completing the planning steps, the following questions are also addressed (Asano and Madancy, 1982; WPCF, 1983).

- What local sources of effluent might be suitable for reuse?
- What are the potential local markets for reclaimed water?
- What health risks are associated with water reuse, and how can they be mitigated?
- How would water reuse "fit in" with present and future use of other water resources in the region?
- What are the present and projected user costs of freshwater in the region?
- What existing or proposed laws and regulations affect wastewater reclamation and reuse possibilities in the region?
- What local or central government agencies must review and approve implementation of a wastewater reclamation and reuse project?
- What are the legal liabilities as a purveyor of reclaimed water?
- What source of funding might be available to support a wastewater reuse project in the region?
- What wastewater reclamation and reuse project would attract the public's interest and support in the region?

I - Wastewater treatment need for irrigation

Although irrigation with wastewater is, in itself, an effective form of wastewater treatment (such as in slow-rate land treatment), some degree of treatment must be provided to untreated municipal wastewater before it can be used for agricultural or landscape irrigation. The degree of preapplication treatment is an important factor in the planning, design, and management of wastewater irrigation systems.

Preapplication treatment of wastewater is practiced for the following reasons (Asamo, *et al.*, 1985):

1. Protection of public health
2. Prevention of nuisance conditions during storage
3. Prevention of damage to crops and soils.

The level of treatment required for agricultural and landscape irrigation uses depends on the soil characteristics, the crops irrigated, the type of distribution and application systems, and the degree of public exposure.

The level of treatment required by regulatory agencies prior to irrigation of many crops is often not greater than, and is sometimes less than, the level of treatment required for discharge to receiving waters. Additional treatment to remove wastewater constituents that may be toxic or harmful to certain crops is technically possible, but normally is not justified economically. To use waters containing such constituents, the crops selected must be tolerant to the wastewater constituents, and systems must be managed to mitigate any harmful effects of these constituents.

1. Wastewater constituents and compositions

The physical properties and the chemical and biological constituents of wastewater are important parameters in the design and operation of collection, treatment, and disposal, and in the engineering management of irrigation facilities. The constituents of concern in wastewater treatment and wastewater irrigation are listed in **Table 1**.

Composition refers to the actual amounts of physical, chemical, and biological constituents present in wastewater. The composition of untreated wastewater and the subsequently treated effluents depends upon the composition of the municipal water supply, the number and type of commercial and industrial establishments, and the nature of the residential community. Consequently, the composition of wastewater often varies widely among different countries. Typical data on the composition of untreated domestic wastewaters in the US are presented in **Table 2**. For comparison, representative composition of night soils in Asia is reported in **Table 3** (Treatment, Disposal and Management of Human Wastes, 1985).

Wastewater quality data routinely measured and reported are mostly in terms of gross, nonspecific

pollutional parameters (e.g., biochemical oxygen demand, suspended solids, chemical oxygen demand) that are of interest in water pollution control. In contrast, the water characteristics of importance in agricultural or landscape irrigation are specific chemical elements and compounds that affect plant growth or soil permeability. These characteristics are not often measured or reported by wastewater treatment agencies as part of their routine water quality monitoring program. Consequently, when obtaining data to evaluate or plan a wastewater irrigation system, it is often necessary to sample and analyze the wastewater for those constituents that define the suitability of the water for agricultural or landscape irrigation.

2. Irrigation water quality

Historically, the quality of irrigation water has been determined by the quantity and kind of salt present. As salinity in the reclaimed wastewater increases above a certain level, the probability of soil, water, and cropping problems also increases. Potential problems are related to the total salt content, to the types of salt, or to excessive concentrations of one or more elements. These problems are not different from those caused by salinity or specific ions in fresh water. They are of concern only if they restrict the use of the water or require special management to maintain acceptable crop growth and yields. For irrigation with reclaimed wastewater, the suitability of a water is, therefore, judged against the level of management needed to cope successfully with the water quality related problems that are expected to develop during use.

The approach often used is to present water quality guidelines that stress the management needed to successfully use irrigation water of a certain quality. Such guidelines were developed by Ayers and Westcot (1985) and reported elsewhere (Westcot and Ayers, 1985). The guidelines included potential problems related to salinity, specific ion toxicity, soils permeability, nutrients, and miscellaneous items such as clogging in sprinkler and drip irrigation systems.

Pathogenic microorganisms such as bacteria, viruses, protozoa, and parasitic worms (helminths) are almost always present in untreated municipal wastewater. The number and types of organisms present in wastewater, however, vary from community to community depending on urbanization, population density,

sanitary habits, season of the year, and rate of disease in the contribution community.

There is some risk of human exposure to pathogens in every irrigation project with reclaimed municipal wastewater, but the health concern is in proportion to the degree of human contact with the reclaimed water and the adequacy and reliability of the wastewater treatment processes. To protect public health without unnecessarily discouraging wastewater reclamation and reuse, many regulations include water quality standards as well as requirements for treatment process, sampling and monitoring, wastewater treatment plant operations, and treatment process reliability. The management of reclaimed water once it leaves the wastewater treatment facility is also an important facet of the overall wastewater reclamation and reuse operation. In order to minimize health risks and aesthetic problems, tight controls are imposed in California on the delivery and use of the reclaimed water. The regulations of any specific irrigation use are based on the expected degree of contact with the reclaimed water and the intended use of irrigated crops. Table 4 shows the health criteria for wastewater treatment and water quality applicable to irrigation in California. While the "California Wastewater Reclamation Criteria" require specific treatment unit processes in conjunction with effluent quality requirements, other unit processes may provide equivalent levels of treatment (Crook, 1985; Pettygrove and Asano, 1985).

II - Irrigation of vegetables with treated wastewater effluent - A five year study

The combination of fertile soils and a long growing season makes the lower Salinas Valley in northern Monterey County, California, a rich agricultural region. Artichokes are a major crop, but a variety of annual crops is also grown: broccoli, cauliflower, celery, and lettuce are grown throughout the region. It became evident during the early 1970s that northern Monterey County's groundwater supply was decreasing because of extensive withdrawal of groundwater for irrigation. This overdraft lowered the water tables and created an increasing problem of saltwater intrusion. At the same time, wastewater treatment facilities were reaching full capacity, requiring expansion to meet the growing needs of

the region. The water quality management plan recommendations recognized that wastewater reclamation had to be proven safe before regional implementation could be considered. This provided the impetus for the Monterey Wastewater Reclamation Study for Agriculture (MWRSA), which was conceived as a pilot project designed to assess the safety and feasibility of agricultural irrigation with reclaimed municipal wastewater.

Planning for the project was begun in 1976 by the Monterey Regional Water Pollution Control Agency (MRWPCA), the regional agency responsible for wastewater collection, treatment, and disposal. Full-scale field studies began in 1980 and continued through May of 1985. During these five years, a perennial crop of artichokes was grown along with rotating annual crops of celery, broccoli, lettuce, and cauliflower. Extensive sampling and analysis of waters, soils, and plant tissues were conducted throughout the five years by Engineering-Science, a consulting engineering firm; University of California; and State agencies (MWRSA – Monterey Wastewater Reclamation Study for Agriculture, 1987).

1. Description of the Project

The site for the MWRSA field operations was a farm in Castroville, California. The existing 1,500 m³/d (0.4 mgd) Castroville Wastewater Treatment Plant was selected for modification and upgrading to be used as the pilot tertiary reclamation plan for MWRSA. A portion of the secondary effluent was diverted to a new pilot tertiary treatment plant which consisted of two parallel treatment process trains. The first process Title-22 process (T-22), conformed strictly to the requirements of the California "Wastewater Reclamation Criteria" for irrigating food crops that may be consumed without cooking. The second process produced a treated wastewater designated as filtered effluent (FE). This is a wastewater treated less extensively than T-22 effluent via direct filtration of secondary effluent. Well water from local wells was the control for the study (Kirkpatrick and Asano, 1986).

The 12-ha (30-acre) field site was divided into two parts, demonstration fields and experimental plots. Large demonstration fields were established because farm-scale feasibility of using reclaimed water is of special importance to the growers, farm managers, and operators responsible for day-to-day farming practices.

To investigate large-scale feasibility of using reclaimed wastewater, two 5-ha (12-acre) plots were dedicated to reclaimed water irrigation, using the FE flow stream. On one plot, artichokes, were grown; on the other plot, a succession of broccoli, cauliflower, lettuce, and celery plants were raised during the first three years of the field investigation. The crops were observed carefully for appearance and vigor. At the end of each season, they were plowed under and incorporated into the soil. Normal farming practices of local growers were duplicated on these fields with the exception of harvest, which was not carried out. Because of its experimental nature, the produce from these plots was not marketed. Six field observation days were held, and the local growers and the news media were invited to acquaint the agricultural community with the ongoing MWRSA activities and to obtain feed-back regarding their perceptions, questions, and concerns (Cort, *et al.*, 1987).

A split-plot design was chosen for the experimental plots. This design allowed the use of two treatment variables: water type and fertilization rate. Four replicates of three types of main plots were irrigated with T-22 effluent, FE, or well water. These three water types were assigned randomly to main plots within each block or replicate to achieve a randomized complete block (i.e., each block contains all three of the main water type treatments). Each main plot was then divided into four subplots, each of which was randomly assigned a different fertilization rate treatment: the full amount of nitrogen fertilizer used by local farmers (3/3), two-thirds the full rate (2/3), and one-third the full rate (1/3), and no fertilizer (0/3). The full design thus had 48 plots. This process was performed for artichokes and repeated for annual row crops, for a total of 96 plots which occupied 1.2 ha (3 acres). This experimental design allowed comparison of both irrigation with different water types and the effect of varying fertilization rates. The fertilization rates were designed to elucidate the value of the two effluents as a supplement to fertilization (Monterey Wastewater Reclamation Study for Agriculture, 1987).

Five years of field data were collected and analyzed. Table 5 lists physical and chemical properties of irrigation waters which were used in MWRSA (Bureau *et al.*, 1987). The following results and conclusions were extracted from the Monterey Wastewater Reclamation Study for Agriculture – Final Report, April 1987).

2. Results of public health studies

A - Virus Survival

Monitoring for the presence of naturally occurring animal viruses showed that the influent to the two pilot processes (Castroville unchlorinated secondary effluent) contained measurable viruses in 53 of the 67 samples taken. The median concentration of virus was 2 plaque-forming units per liter (PFU/L): 90% of the samples contained less than 28 PFU/L. During the approximate five-year period, no *in situ* viruses were recovered from the chlorinated tertiary effluent of either process.

No viruses were recovered from any of the crop samples. This was also the case for the soil irrigated with the reclaimed water.

B - Virus seeding of plants and soil

Although no *in situ* viruses were recovered from irrigated plants and soil, it was important that an estimate be made of the ability of virus to survive under these conditions. Virus survival measurements were made in the laboratory and under field conditions. In the laboratory, the times required for a 99% die-off in the viruses (T_{99}) ranged from 7.8 days for broccoli to 15.1 days for lettuce. In field studies in Castroville, the T_{99} values were 5.4 days for artichokes, 5.9 days for romaine lettuce, 7.8 days for butter lettuce.

The survival of virus in Castroville soil was determined both under environmental chamber conditions and under field conditions. The T_{99} values for the decay of virus under environmental chamber conditions were respectively, 5.4, 9.7, and 20.8 days for 60, 70, and 80% relative humidity. In the field the T_{99} s were 5.2 and 4.8 days for runs one and two, respectively. Thus, the rate of virus removal under chamber and field conditions was quite similar. No viruses were recovered from any soil section after 12 to 14 days of exposure.

C - Bacteria and parasites

During the five years of the study, the quality of irrigation waters improved because of the continued improvement in treatment plant operations and storage procedures. All three types of waters, including the well water control, periodically exhibited high coliform levels. No salmonellae, shigellae, *Ascaris lumbricoides*,

Entamoeba histolytica, or other parasites were ever detected in any of the irrigation waters.

The levels of total and fecal coliform in soils and plant tissue irrigated with all three types of water were generally comparable. No significant difference attributable to water type was observed. No parasites were ever detected in soil samples. Parasites were detected in plant tissue only in Year One, and there were no differences in level of contamination between effluent and well water-irrigated crops.

Sampling of neighboring fields detected no relationship between bacteriological levels and the distance from the field site. The aerosol transmission of bacteria was thus deemed unlikely.

D - Groundwater protection

No discernible relationship existed between the quality of the shallow groundwater underlying the site and the type of applied irrigation water. An examination of all water quality data collected suggests that the groundwater quality trends were associated with trends generally applicable in irrigated areas such as increased TDS and nitrate.

E - Aerosols

It was concluded early in the field operations of MWRSA that aerosol-carried microorganisms from FE sprinklers were not significantly different from those generated by well-water sprinklers. This finding was verified through replications both in daytime and night-time operations to account for die-offs of organisms caused by ultraviolet rays of the sun. Subsequently reported studies by others have corroborated these findings and established the safety of aerosols from an FE spray.

F - Health and field workers

In addition to these studies, the health status of each person assigned to the field tasks in MWRSA was monitored regularly through frequent questionnaires and thorough initial and exit medical examinations administered by qualified medical professionals. One hundred questionnaires were completed by personnel during the five years. No complaints could be related by personnel during the five years. No complaints could be related to contact with

treated wastewater effluents. No formal epidemiological investigation was deemed appropriate or necessary for the purposes of MWRSA.

3. Results of agricultural studies

A - Irrigation water quality

As one would expect, the two treated effluents had higher levels of most chemical and metal constituents than did well water. The nutrient value of both effluents was substantial. The salt content of irrigation waters was important because of the potential for deleterious effects on crops and soils. Sodium content of irrigation waters was of particular concern because high levels of sodium along with low salinity can create poor soil physical conditions, which reduce permeability (Westcot and Ayers, 1985).

Salinity of irrigation waters was determined by measuring electrical conductivity (EC) and total dissolved solids (TDS), as well as the concentration of boron, chloride, sodium, bicarbonate, calcium, and magnesium. Concentrations of TDS less than 480 mg/L are recommended for irrigation waters, and levels above 1,920 mg/L are considered to be a severe problem. Levels of EC, TDS, boron, chloride, and sodium in the two treated effluents were comparable and were higher than those in well water. Concentrations of TDS in all three types were below the "severe problem" range, but effluent TDS fell into the range of "increasing problems" (see Westcot and Ayers, 1985). Levels of magnesium and calcium were similar in all three water types. Bicarbonate levels were higher in filtered effluent than in the other two water types, which showed similar concentrations.

The sodium adsorption ratio (SAR) is a measure of the suitability of water for irrigation. Irrigation water data indicate that the reclaimed water is generally in the favorable range for irrigation, because high SAR is accompanied by similarly high salinity (see Table 5).

B - Heavy metals in soils

None of the nine heavy metals studied (cadmium, zinc, iron, manganese, copper, nickel, cobalt, chromium, or lead) manifested any consistently significant difference in concentration among plots irrigated with different water types. Furthermore, except in the case of copper, no

increasing trends with time over the five years were observed. The gradual increase observed for copper occurred equally for all water types, and at the end of the five years, copper concentrations were still below the average for California soils. Iron was generally measured at higher concentrations in the well water than in either effluent. Zinc, however, was higher in both effluents than in well water, although the actual concentrations were on the order of 0.1 mg/L in the two effluents. At these levels, uptake by plants would be faster than accumulation from irrigation input.

Input of zinc and other heavy metals, from the commercial chemical fertilizer impurities, is far greater and accounts for the large concentration differences observed at the three soil depth sampled throughout the five years. The differences have occurred over many decades of continuous farming with regular applications of chemical fertilizers.

C - Heavy metals in plant tissues

The same nine metals studied in the soils were also investigated in samples of the edible tissues of plants collected at harvest at each of the 96 subplots. The most important of the many results is that no consistently significant difference in heavy metal concentrations was observed in plants irrigated with either effluent and with well water in any of the 16 samplings over the five-year field trials.

Analysis of cadmium and zinc in residual tissue produced results very similar to those from edible tissues, i.e., no consistent, significant differences were observed between plants irrigated with well water and with either of the two reclaimed waters. However, consistent differences in the accumulation of zinc and cadmium were observed between edible and residual tissues (higher cadmium in residual tissues and higher zinc in edible tissues for all vegetables studied). This difference in accumulation is in fact fortuitous, because it results in relatively higher zinc to cadmium ratios in the edible portion of the crops, believed to be a safeguard against cadmium bioaccumulation and the resultant health hazards.

D - Soil permeability

Infiltration rates in lettuce field were highest in those plots irrigated with well water, but these

levels were not significantly different because of the great variation of infiltration rates within each water type. Infiltration rates in the artichoke field were higher than in the lettuce field. This is probably due to the fact that the artichoke field received less irrigation water and was less frequently compacted by equipment used for field preparation.

E - Crop yields

Artichoke yields were similar for all three water types; in the first two years, the different fertilization rates had no effect on yield. In the last three years, a significant effect of fertilization became apparent. All three fertilization rates showed significantly higher yields than did the unfertilized plots. There were, however, no significant differences in yield among the 1/3, 2/3, and 3/3 rates. The typical full fertilization rate may thus be in excess of the artichoke plants' requirements. The lack of fertilization effect in the first two years may have been due to the presence of residual fertilizer left by previous over-fertilization.

For most vegetables, yield was somewhat higher with irrigation with FE and Title-22 than with well water, and increases in yield with increasing fertilizer tended to level off at the 2/3 fertilizer rate. Yields of all seven lettuce crops were similar for the three different water types. Increases in lettuce yield tended to level off at the 2/3 rate.

F - Crop quality

Field quality assessments and shelf life measurements uncovered no differences between produce irrigated with reclaimed water and that irrigated with well water. Visual inspection of artichoke plants in the field showed no differences in appearance or vigor of plants irrigated with different water types. Occasional problems with mouse damage were not related to water type.

Shelf life and quality of row crops were similar for all water type treatments. No problems with increased spoilage of produce irrigated with effluents were encountered.

4. MWRSA findings

- Based on virological, bacteriological and chemical results from sampled vegetable tissues, irrigation with filtered effluent or T-22 appears to be as safe as with well water.

- After five years of field experimentation (1980 to 1985), results show few statistically significant differences in measured soil or plant parameters attributable to the different water types. None of these differences has important implications for public health. Yield of annual crops is often significantly higher with reclaimed water.

- No virus was detected in any of the reclaimed waters sampled although it is often detected in the secondary effluent.

- The T-22 process is somewhat more efficient than the FE process in removing viruses when influent is artificially inoculated (seeded) at extremely high rates. Both flow streams can remove more than five logs of virus (i.e., removal to below 1/100,000 of the seeded concentration).

- Marketability of produce is not expected to be a problem.

- The cost of producing filtered effluent (after secondary treatment) is estimated to be \$0.06/m³, excluding conveyance and pumping costs.

III - Appropriate wastewater treatment technologies for irrigation

Appropriate technologies are derived from a variety of sources. Most, though not all, technologies are appropriate to the specific time and place in which they are developed. Some can be transferred to other times and places and many can be improved in stages as additional resources become available (Gunnerson and Kalbermatten, 1979).

Technology options for wastewater treatment and disposal are limited by the resources available and the cost considerations of conventional and unconventional alternatives. As discussed in other presentations in this seminar, existing or traditional wastewater treatment facilities are often cost-effective and frequently can be transferred or upgraded in stages as funds become available. In many situations, when the intent of wastewater treatment is to minimize the probability of human exposure to pathogenic organisms (as exemplified in irrigation with wastewater), storage ponds and waste stabilization ponds are often the appropriate technologies. For small communities and/or developing countries, waste stabilization ponds,

aquatic treatment systems, and similar low-rate biological processes are usually the most cost-effective method of pretreatment for agricultural irrigation. Where a higher quality effluent is required, such systems as a soil-aquifer treatment system may be appropriate.

1. Selection of appropriate technologies

Important issues in the selection of appropriate technologies for small communities and/or developing countries include:

- a) Local health concerns;
- b) Required effluent quality;
- c) Required treatment plant capacity;
- d) Initial capital cost;
- e) Operation and maintenance cost;
- f) Required energy for treatment.

The order of importance of the above factors will vary with each reuse application and use area control.

For example, aerated lagoons and stabilization ponds can be used to treat municipal wastewater adequately for most irrigation purposes. Pond systems also have the advantage of acting as a storage reservoir for non-irrigating seasons. A major factor to consider when deciding whether to construct stabilization ponds is the amount of land they require. If little land is available near a wastewater source, untreated or treated wastewater will have to be pumped to stabilization and/or storage ponds in the closest agricultural area. Estimated construction cost for a 379 m³/day pond system are compared to other forms of biological wastewater treatment in Table 6. The land area required for each type of system is also noted. The effect of land value on different wastewater treatment processes is presented in Table 7. As shown, although stabilization ponds are often the low-cost option, because they are land intensive, other wastewater treatment options may be more attractive or necessary, particularly for land that carried higher values (Reed and Hais, 1979; Arthur, 1983).

From the data and discussions presented in this section, and other presentations, it can be concluded that low-rate biological processes offer significant economic advantages, especially for small communities. Furthermore, the operation of low-rate systems is not dependent on the availability of highly skilled personnel. Also,

because significant reductions in pathogenic organisms can be achieved in pond systems, they are well suited for many developing countries where water is short and resources are limited. Where higher levels of treatment are needed, aquatic and soil-aquifer treatment systems and other more energy intensive systems may be the feasible options.

IV - Summary and conclusions

The quality of reclaimed water to be used for irrigation depends to a great extent on the quality of the municipal water supply, nature of the wastes added during use, and the degree of treatment the wastewater has received. The quality of irrigation water has historically been determined by the quantity and kind of salt present in these water supplies. As salinity increases above a certain level, the probability for certain soil, water, and cropping problems increases. These problems are related to the total salt content, to one or more types of salt, or to excessive concentrations of one or more elements. The problems, however, are not different from those caused by salinity or trace elements in freshwater supplies and are of concern only if they restrict the use of the water or require special management to maintain acceptable yields.

To protect public health without unnecessarily discouraging wastewater reuse, many regulations related to agricultural and landscape irrigation include water quality standards as well as requirements for treatment processes, sampling and monitoring, wastewater treatment plants operations, and treatment process reliability. The management of the reclaimed water once it leaves the wastewater treatment facility is also an important facet of the overall wastewater reclamation and reuse operation. In addition, for irrigation with reclaimed municipal wastewater to be a reasonable alternative for municipalities, financial and economic feasibility for farm owners-operators, landowners, and farm tenants must be shown. In the USA, however, wastewater reclamation and reuse have historically been largely viewed as a means of treatment and disposal of wastewater, primarily through land application. Thus, the economics were approached from a wastewater management perspective by comparing irrigation with reclaimed municipal wastewater with other methods of wastewater treatment and disposal. In this case, the water

supply benefits, in the form of usable crops, were generally ignored in the economic analyses. However, before shifting its water source from fresh water, a prospective reclaimed water user will expect the difference in price between fresh water and reclaimed water to reflect any added costs or savings incurred by the user.

A recently completed agricultural irrigation project, Monterey Wastewater Reclamation Study for Agriculture, was discussed in relation to the California experiences in irrigation with reclaimed municipal wastewater. The five-year field data indicate few statistically significant differences in measured soil or plant parameters attributable to the different water types. None of these differences showed important public health implications.

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Table 1: Constituents of concern in wastewater and irrigation with reclaimed municipal wastewater

Constituents	Measured parameters	Reason for concern
Suspended solids	Suspended solids, including volatile and fixed solids	Suspended solids can lead to the development of sludge deposits and anaerobic conditions when untreated wastewater is discharged in the aquatic environment. Excessive amounts of suspended solids cause soil plugging in irrigation systems.
Biodegradable organics	Biochemical oxygen demand, chemical oxygen demand	Composed principally of proteins, carbohydrates, and fats. If discharged to the environment, their biological decomposition can lead to the depletion of dissolved oxygen in receiving waters and to the development of septic conditions.
Pathogens	Indicator organisms, total and fecal coliform bacteria	Communicable diseases can be transmitted by the pathogens in wastewater: bacteria, virus, parasites.
Nutrients	Nitrogen Phosphorus Potassium	Nitrogen, phosphorus, and potassium are essential nutrients for plant growth, and their presence normally enhances the value of the water for irrigation. When discharged to the aquatic environment, nitrogen and phosphorus can lead to the growth of undesirable aquatic life. When discharged in excessive amounts on land, nitrogen can also lead to the pollution of groundwater.
Stable (refractory) organics	Specific compounds (e.g., phenols, pesticides, chlorinated hydrocarbons)	These organics tend to resist conventional methods of wastewater treatment. Some organic compounds are toxic in the environment, and their presence may limit the suitability of the wastewater for irrigation.
Hydrogen ion activity	pH	The pH of wastewater affects metal solubility as well as alkalinity of soils. Normal pH range in municipal wastewater is 6.5 - 8.5, but presence of industrial waste can alter pH significantly.
Heavy metals	Specific elements (e.g., Cd, Zn, Ni, Hg)	Some heavy metals accumulate in the environment and are toxic to plants and animals. Their presence may limit the suitability of the wastewater for irrigation.
Dissolved inorganics	Total dissolved solids, electrical conductivity, specific elements (e.g., Na, Ca, Mg, Cl, B)	Excessive salinity may damage some crops. Specific ions such as chloride, sodium, boron are toxic to some crops. Sodium may pose soil permeability problems.
Residual chlorine	Free and combined chlorine	Excessive amount of free available chlorine (> 0.05 mg/L CL ²) may cause leaf-tip burn and damage some sensitive crops. However, most chlorine in reclaimed wastewater is in a combined form, which does not cause crop damage. Some concerns are expressed as to the toxic effects of chlorinated organics in regard to ground water contamination.

Source: Asano et al., 1985

Table 2: Typical composition of untreated municipal wastewater

Constituent	Concentration range			U.S. average
	Strong	Medium	Weak	
Solids, total	1,200	720	350	-
Dissolved, total:	850	500	250	-
Fixed	525	300	145	-
Volatile	325	200	105	-
Suspended	350	220	100	192
Fixed	75	55	20	-
Volatile	275	165	80	-
Settleable solids, mL/L	20	10	5	-
Biochemical oxygen demand, 5-day 20°C	400	220	110	181
Total organic carbon	290	160	80	102
Chemical oxygen demand	1,000	500	250	417
Nitrogen (total as N)	85	40	20	34
ORG-N	35	15	8	13
NH ₃ -N	50	25	12	20
NO ₃ -N	0	0	0	-
NO ₃ -N	0	0	0	0.6
Phosphorus (total as P)	15	8	4	94
Organic	5	3	1	26
Inorganic	10	5	3	68
Chlorides	100	50	30	-
Alkalinity (as CaCO ₃)	200	100	50	211
Grease	150	100	50	-
Total coliform bacteria, MPN/100mL	-	-	-	22 x 10 ⁶
Fecal coliform bacteria, MPN/100mL	-	-	-	8 x 10 ⁶
Viruses, PFU/100 mL	-	-	-	3.6

(a) All values are expressed in mg/L, except as noted

Table 3: Representative composition of night soils (a)

Constituent	Concentration range (b)
pH	7—9
Biochemical oxygen demand	9,000—22,000
Suspended solids	9,000—26,700
Total solids	18,000—45,000
Chemical oxygen demand	5,000—45,000
Total nitrogen	4,000 — 7,000
NH ₃ -N	2,000 — 3,500
Kjeldahl-N	3,000 — 4,000
Total phosphorus	600 — 1,600
Chloride	2,300 — 5,600

- (a) Data were compiled from the papers presented at the IAWPRC'S First Asian Conference on Treatment, Disposal and Management of Human Wastes, 1-3 October, 1985, Tokyo, Japan
- (b) All values are expressed in mg/L, except pH

Table 4: Wastewater treatment and bacteriological quality criteria for irrigation (State of California, 1978)

Treatment level	Coliform limits MPN (a)	Type of use
Primary	- -	Surface irrigation of orchards and vineyards fodder, fiber, and seed crops
Secondary and disinfection	≤ 23/100 ml	Pasture for milking animals Landscape irrigation (golf courses, cemeteries, etc.)
	≤ 2.2/100 ml	Surface irrigation of food crops (no contact between water and edible portion of crop)
Tertiary with coagulation clarification, filtration (b), and disinfection	≤ 2.2/100 ml max. = 23/100 ml	Spray irrigation of food crops Landscape irrigation (parks, playgrounds, etc.)

- (a) See in detail "Wastewater reclamation criteria", State of California, Department of Health Services, 1978
- (b) The turbidity of filtered effluent cannot exceed an average of 2 turbidity units (NTU) during any 24-hour period

Table 5: Physical and chemical properties of irrigation waters, August 19, 1980 to June 13, 1985

Parameter	Well water		Title-22 water		Filtered effluent	
	Range	Median	Range	Median	Range	Median
----- mg/L, unless otherwise noted -----						
pH *	6.9 - 8.1	7.8	6.6 - 8.0	7.2	6.8 - 7.9	7.3
Electrical conductivity †	400 - 1,344	700	517 - 2,452	1,256	484 - 2,650	1,400
Calcium	18 - 71	48	17 - 61.1	52	21 - 66.8	53
Magnesium	12.6 - 6.36	18.8	16.2 - 40	20.9	13.2 - 57	22
Sodium	29.5 - 75.3	60	77.5 - 415	166	82.5 - 526	192
Potassium	1.6 - 5.2	2.8	5.4 - 26.3	15.2	13 - 31.2	18
Carbonate, as CaCO ₃	0.0 - 0.0	0.0	0.0 - 0.0	0.0	0.0 - 0.0	0.0
Bicarbonate, as CaCO ₃	136 - 316	167	56.1 - 248	159	129 - 337	199.5
Hardness, as CaCO ₃	154 - 246	202.5	187 - 416	217.5	171 - 435	226.5
Nitrate as N	0.085 - 0.64	0.44	0.18 - 61.55	8.0	0.08 - 20.6	6.5
Ammonia as N	** -1.04	* *	0.02 - 30.8	1.2	0.02 - 32.7	4.3
Total phosphorus	** -0.6	0.02	0.2 - 6.11	2.7	3.8 -14.6	8.0
Chloride	52.2 - 140	104.4	145.7 - 841	221.1	145.7 - 620	249.5
Sulfate	6.4 - 55	16.1	30 - 256	107	55 - 216.7	84.8
Boron	0.01 - 9	0.08	0.01 - 0.81	0.36	0.11 - 0.9	0.4
Total dissolved solids	244 - 570	413	643 - 1,547	778	611 -1,621	842
Biochemical oxygen demand	0.6 - 33	1.35	0.7 - 102	13.9	** -315	19
Adjusted SAR ††	1.5 - 4.2	3.1	3.1 - 18.7	8.0	3.9 - 24.5	9.9
MBAS †††	** - **	* *	0.095 - 0.25	0.136	0.50 - 0.585	0.15

Source: Bureau, R.G. et al., 1987

- * Standard pH units
- † Micromhos/centimeter
- †† Sodium adsorption ratio, no unit
- ††† Methylene-blue-active substance
- Chemical concentration below detection limit

- Detection limits are as follows:
- Ammonia = 0.002 mg/L
 - Phosphorus = 0.01 mg/L
 - Boron = 0.02 mg/L
 - Biochemical oxygen demand = 1.0 mg/L
 - MBAS = 0.05 mg/L

Table 6: Estimated costs for 379 m³/day wastewater treatment facilities (in 1986 U.S. dollars) (a), (d)

System type	Capital costs \$ 1,000 (b)	Land area (ha)	Annual energy requirement (1,000 kW.h/year) (c)
1. Low rate biological processes			
Stabilization pond			
Northern climate	531	2.0	0
Southern climate	238	1.2	0
Aerated lagoon	559	0.4	15
2. High rate biological processes			
Oxidation ditch	639	0.4	43
Rotating biological contactors	913	0.6	18

- (a) After Reed and Hais with modifications
- (b) Does not include raw wastewater pumping, disinfection or land costs
- (c) Does not include raw wastewater pumping, preliminary treatment, disinfection or sludge treatment and disposal
- (d) Costs are adjusted for 1986 using the Engineering News Record Construction Cost Index

Table 7: Effect of land value on different wastewater treatment processes (a),(b)

System type	Total present value, in U.S. million dollars at given land value		
	\$ 10,000/ha	\$ 50,000/ha	\$ 100,000/ha
1. Low rate biological processes			
Stabilization pond	4.1	5.9	8.2
Aerated lagoon	6.4	8.3	10.8
2. High rate biological processes			
Oxidation ditch	5.5	6.3	7.3
Biological filter (Trickling filter)	7.4	8.4	9.9

- (a) After Arthur with modifications
- (b) Includes capital and operation and maintenance costs for average wastewater flow of 30,000 m³/day and present values at 12 percent discount

6. Guidelines for Construction/Use of Reclaimed Water – Los Angeles County Environmental Health



LOS ANGELES COUNTY ♦ DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH



CROSS CONNECTIONS AND WATER POLLUTION CONTROL PROGRAM
5050 Commerce Drive, Baldwin Park, CA 91706-1423
Tel (626) 430-5290 FAX (626) 813-3025

**GUIDELINES FOR PIPELINE CONSTRUCTION AND INSTALLATION -
FOR THE SAFE USE OF RECYCLED / RECLAIMED WASTEWATER**

PURPOSE: As a result of increasing availability of recycled / reclaimed wastewater and an increased need for the transmission and use thereof, the Department of Public Health – Environmental Health (the Department) has found it necessary to establish the following regulations for pipeline construction and installation as well as for the safe use of recycled / reclaimed wastewater. These regulations are intended to protect public health by ensuring the safety of our domestic potable water supplies.

BACKGROUND: A recent increase in the number of inquiries and interest displayed regarding the use of recycled / reclaimed water, in the ongoing efforts to conserve water, have necessitated the need to establish definitions, standards and regulation for the uniform review and approval of recycled / reclaimed wastewater. Recycled / reclaimed water may be used for surface irrigation of the following: food crops; parks and playgrounds; school yards; residential landscaping; and unrestricted access golf courses.

DEFINITIONS:

Gray Water means untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes water from bathtubs, showers, bathroom wash basins, clothes-washers and laundry tubs.

Non-Potable Water means water which is unfit for human or animal consumption due to contaminants that exceed the current permissible Maximum Contaminant Level (MCL) in drinking water.

Potable Water means water which is fit for consumption by humans and other animals. The U.S. Environmental Protection Agency (EPA) identifies contaminants that may adversely affect public health and occur in drinking water with a frequency and at levels that pose a threat to public health. The EPA establishes (MCLs) for both biological and chemical contaminants permissible in drinking water. These MCLs become enforceable standards that determine the potability of water.

Recycled / Reclaimed Water means non-potable water that meets or as a result of treatment, meets federal requirements for its intended uses. The level of treatment and quality of the reclaimed / recycled water shall be approved by the Authority Having Jurisdiction. Reclaimed / recycled water systems shall have no connection to any potable water system, with or without mechanical backflow prevention devices.

RECYCLED / RECLAIMED WASTEWATER SYSTEMS SHALL BE CONSTRUCTED IN COMPLIANCE WITH APPLICABLE POTABLE WATER SYSTEM CONSTRUCTION STANDARDS AS WELL AS THOSE SPECIFIED IN “THE PURPLE BOOK”, CALIFORNIA HEALTH LAWS RELATED TO RECYCLED WATER, (CALIFORNIA HEALTH AND SAFETY CODE, WATER CODE, TITLES 22 AND 17 OF THE CALIFORNIA CODE OF REGULATIONS) AND THE LOS ANGELES COUNTY CODE (LACC), TITLE 28 – PLUMBING, APPENDIX J.

PRELIMINARY REQUIREMENTS

- Plans and specifications for recycled / reclaimed wastewater distribution systems, as well as the use and operation of such systems shall be submitted to the Department for review and approval prior to construction or implementation.
- Prior to commencing construction, the Contractor shall contact the Department to schedule an inspection of the proposed on-site recycled / reclaimed and potable water work.
- No piping for potable or recycled / reclaimed water in conjunction with a specified project shall be installed prior to plan check approval and preliminary inspection.
- Upon completion of construction, no excavation or open trench may be backfilled without first securing the Department approval. Any areas backfilled without prior approval will be required to be exposed and corrected as necessary.
- Only a Department approved temporary water connection, to a potable water supply via a dedicated, approved, reduced-pressure-principle backflow prevention device shall be permitted to be utilized for the purpose of flushing, pressure testing, construction, landscape use or the final cross-connection testing.

SEPARATION REQUIREMENTS

The maximum attainable separation of recycled / reclaimed wastewater lines and potable water lines shall be enforced in order to minimize potential risks associated with pipeline breaks resulting in infiltration of wastewater from leaking wastewater lines into domestic water lines, or accidental cross-connections between recycled wastewater and potable water systems.

- Parallel Construction: A horizontal separation of at least ten feet (10') shall be required between pressurized, buried, recycled / reclaimed and potable water piping (all distance to be measured from pipeline outside diameter).

- Cross-Over Construction: Buried potable water pipes crossing over pressurized recycled / reclaimed water pipes shall be laid not less than twelve inches (12") above the reclaimed water pipes. Reclaimed water pipes laid in the same trench or crossing-over building sewer or drainage piping shall be installed in compliance with the LACC – Title 28, Plumbing, Sections 609.0 and 720.0.
- Unused or Abandoned Potable Water Lines: These lines are to be severed as close to water mains as practical, capped, and a ten foot (10') section of abandoned line removed and cemented under direct supervision by the Department.
- Existing On-site Piping: Maximum separation of recycled / reclaimed wastewater lines and potable water lines shall be maintained upon system additions or modification.

PIPELINE MATERIALS AND IDENTIFICATION

All recycled / reclaimed water pipe materials, valves and fittings shall conform to the requirements of the LACC – Title 28, Plumbing, Sections 604.0, 605.0 and 606.0.

All recycled / reclaimed wastewater lines (pressure / non-pressure), valve boxes, hydrants and appurtenances shall be identified to clearly distinguish between recycled / reclaimed wastewater, non-potable and potable water systems (as specified in LACC – Title 28, Plumbing, Appendix J).

- Recycled / Reclaimed Wastewater: All buried, recycled, wastewater systems (pressure / non-pressure) shall utilize purple pipe with black uppercase lettering "CAUTION: RECYCLED WATER – DO NOT DRINK" printed on opposite sides of the pipe. For limited application, the use of continuous lettering on three inch (3") minimum width purple tape with one inch black or white contrasting uppercase lettering "CAUTION RECYCLED WATER – DO NOT DRINK" permanently affixed at intervals not to exceed five feet, atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and / or vaults, exposed piping, hydrants and quick couplers. All valves, except fixture supply control valves shall be equipped with a locking feature. All mechanical equipment that is appurtenant to the recycled / reclaimed water system shall be painted purple.
- Potable Water: All potable water lines shall be installed in accordance with the Uniform Plumbing Code and all other applicable potable water system construction standards. All buried potable water lines shall be clearly identified by continuous lettering on three inch (3") minimum width blue tape with one inch (1") white lettering bearing the repeated wording "POTABLE WATER" permanently affixed at ten foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and / or vaults, exposed piping and hydrants. Identification tape is not necessary for extruded colored PVC with continuous wording "POTABLE WATER" printed in contrasting lettering on opposite sides of the pipe.

- Non-Potable Water: All non-potable irrigation / industrial water lines (pressure / non-pressure) shall be identified by continuous lettering on three inch (3”) minimum width tape with one inch (1”) contrasting lettering bearing the continuous uppercase lettering “NON-POTABLE WATER – DO NOT DRINK” permanently affixed at ten foot (10’) intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and / or vaults, exposed piping, hydrants and quick couplers. Exposed piping, valve boxes, vaults, control valves, quick coupling valves, outlets and related appurtenances shall be color-coded and labeled / tagged to differentiate between recycled / reclaimed wastewater, potable water and non-potable water systems. Tags identifying recycled / reclaimed water shall have the appropriate identification on both sides (wording on one side and symbol on the opposite side).



THE SAFE USE OF RECYCLED / RECLAIMED WATER PROTECTS POTABLE WATER

- Deteriorated or inadequately-protected well water casings shall be repaired or replaced to protect aquifers against contamination from recycled / reclaimed wastewater systems.
- An On-Site Water Supervisor shall be appointed, having the responsibility of oversight for the protection of the potable water system (provided for under Title 17, Section 7586, and California Code of Regulations). The name and position of the On-Site Water Supervisor shall be reported to the water purveyor and to the Department. This position will be responsible for the installation, operation and maintenance of the recycled / reclaimed wastewater and potable water systems; authorization of any piping changes or additions to either the potable or recycled systems; prevention of potential hazards; implementation of the regulations; and coordination with the Cross-Connection Program of the water purveyor and of this Department.
- Hose bibbs shall not be permitted in any areas of public access to recycled / reclaimed wastewater systems, to prevent unauthorized use of recycled wastewater. Quick-couplers are permitted in lieu of hose-bibb outlets but shall only be connected to recycled / reclaimed wastewater lines. Hose bibbs may be permitted in areas that are not accessible to the public, provided they are properly identified with permanently affixed tags, labels, or plates with uppercase lettering “RECYCLED WATER – DO NOT DRINK” in English.

- The use of recycled / reclaimed wastewater for irrigation purposes shall minimize exposure of the wastewater spray to drinking fountains and picnic tables through selective location of equipment and by appropriate irrigation system design. Additionally, the following measures should be taken: recycled wastewater spraying shall be done during hours of least public exposure; any area where recycled wastewater is released, used or impounded should be posted, informing the public that recycled water is being used; and irrigation practices utilizing recycled water shall be controlled to prevent surface runoff.

BACKFLOW PROTECTION

- There shall be no interconnection between a potable water system and a recycled / reclaimed water system within the user's premises.
- A dye or pressure test shall be utilized to confirm the physical separation of a recycled wastewater system and a potable water system. Testing shall be performed in conjunction with the Water Purveyor and this Department and conducted before the introduction of recycled wastewater.
- An approved backflow prevention device shall be installed at the potable water service connection.
- In a recycled / reclaimed wastewater distribution system, a backflow prevention device may be required at the recycled wastewater meter or at specific on-site locations where said use could degrade the quality of the recycled wastewater supply.



**7. Recycled Water User Manual – L.A. County
Recycled Water Advisory Committee**

Recycled Water USER MANUAL

DEVELOPED BY:
Los Angeles County
Recycled Water Advisory Committee

2 0 0 5

“On-Site” Supervisor Do's and Don'ts

Do's

- Install and maintain signs at all points of entry (pedestrian and vehicular)
- Install and maintain labels and tags on recycled and potable water systems
- Operate irrigation system:
 - Between 10 p.m.–6 a.m. if automatically controlled (unless other restrictions apply)
 - At other times if manually controlled and supervised (someone present) to make sure the recycled water doesn't come in contact with the public
 - At any time if use site is restricted to the general public
- Use quick couplers instead of hose bibbs
- Contact “provider” if any water system (potable or recycled) modifications are anticipated
- Immediately contact water utility and/or recycled water producer if any of the following has occurred:
 - A recycled water line break, spill or off-site discharge of recycled water
 - A violation of water recycling requirements
 - A cross-connection between the recycled and potable water systems
- Educate/train site workers on safe use and restrictions of recycled water
- Keep records and as-built drawings up-to-date and accessible
- Assist and cooperate during Periodic Visual Inspections
- Assist and cooperate during Periodic Cross-Connection Testing

Don'ts

- Don't drink recycled water
- Don't use recycled water to wash hands or any other part of body
- Don't remove recycled water identification signs, tags or labels
- Don't cross-connect two dissimilar water systems (recycled to potable)
- Don't allow recycled water to contact drinking fountains or eating areas
- Don't allow recycled water to pond or puddle
- Don't allow recycled water to runoff the use site property by either overspray or overwatering
- Don't use recycled water on an unapproved site
- Don't put hose bibbs on recycled water systems (unless public access is restricted)
- Don't use the same equipment on both recycled water and domestic water systems (for example, quick couplers, tools, etc.)
- Don't modify any water system without prior approval of provider and/or Health Department

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FOREWORD

The Recycled Water Urban Irrigation User's Manual (Manual) has been prepared to convey the general rules, regulations and guidelines regarding the safe introduction and use of recycled water for landscape irrigation in Los Angeles County and other areas in the State of California. This document was prepared by the *Los Angeles County Recycled Water Advisory Committee* (LACRWAC, a local chapter of the California Section of the WaterReuse Association), which is comprised of water utilities, regulatory interests, and other entities interested in the safe introduction and use of recycled water. At the time of this publication, LACRWAC included:

Regulatory Agencies:

- State of California Department of Health Services
- County of Los Angeles Department of Health Services
- Los Angeles Regional Water Quality Control Board

Water and Wastewater Utilities:

- Castaic Lake Water Agency
- Central Basin Municipal Water District
- City of Burbank
- City of Glendale
- City of Long Beach
- City of Pasadena
- County Sanitation Districts of Los Angeles County
- Las Virgenes Municipal Water District
- Los Angeles Department of Water & Power
- Metropolitan Water District of Southern California
- Water Replenishment District of Southern California
- West Basin Municipal Water District
- Upper San Gabriel Valley Municipal Water District

Other Interested Entities:

- California State Department of Water Resources
- Carollo Engineers
- CH2M HILL
- Tetra Tech, Inc.

Each recycled water customers' representative ("Site Supervisor") is responsible to read and understand the Manual and any water reclamation requirements applicable to their particular site. Questions about the use of recycled water or the Manual should be directed to the "Recycled Water Agency" that serves the customer.

INTRODUCTION

PURPOSE

The purpose of this Manual is to provide the recycled water “User” and “Site Supervisor” a resource for the day-to-day operation and control of that system, in order to protect the health and welfare of the personnel involved with its use as well as the general public, and to protect the quality of local water resources. Recycled water is an important resource for the State of California, and its use for nonpotable applications is, in many cases, mandated by State law. This Manual provides necessary information to meet existing regulations for the operation of the User’s recycled water system.

Every effort has been made to ensure that this Manual is in compliance with, and is not intended to supersede, existing codes, laws, statutes and regulations of the State of California, Regulatory Agencies and local governing bodies, concerning the currently approved use of recycled water. This Manual is also not intended to supersede the American Water Works Association (AWWA) California-Nevada Section’s Guidelines for Distribution of Nonpotable Water or Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water.

Since legal and regulatory requirements can change without the express approval or knowledge of the Recycled Water Agency, the Recycled Water Agency assumes no liability for errors in this Manual. It’s the responsibility of the User to check with its Recycled Water Agency before initiating any operational or physical changes to the use site’s system.

This Manual is organized in the following manner:

- ☞ The *User’s Summary* provides a brief commentary on major topics and indicates a page number to find additional information.
- ☞ *General Provisions* covers the basic administrative requirements including authorities, responsibilities and liabilities.
- ☞ *Design and Construction* covers the considerations needed when an on-site recycled water system is first installed or modified.
- ☞ *Operation and Maintenance* covers the basic conditions for service contained in the State of California’s “Water Recycling Criteria”.
- ☞ *Marking and Equipment* gives the basic requirements for marking the water systems and signing the use area.
- ☞ *Cross-connection Controls* and *Pressure Testing Procedure* outline the requirements for protecting the potable water system and keeping it separate from the recycled water system.
- ☞ *Sample Forms and Site-Specific Details* provides a summary of steps to obtain recycled water, templates of sample forms to help with inspections and a location for information specific to the use-site.
- ☞ *Local Governing Agencies* provides the names, addresses and phone numbers of agencies responsible for the regulatory administration of water recycling activities.
- ☞ *Definitions* are included for terms used within the Manual.

WHAT IS RECYCLED WATER?

“Recycled water,” (also called “reclaimed water”) as used in this Manual and defined in Title 22, Chapter 3 of the California Code of Regulations, refers to tertiary-treated water produced from the three-stage treatment of municipal wastewater (see box, right). (Although secondary-treated effluent may also be reused, its applications are limited and subject to much greater restrictions, and it will not be addressed in this Manual.) The facilities that produce recycled water are known as Water Recycling (or Reclamation) Plants that are owned and operated by “Recycled Water Producers.” The recycled water produced by these plants is delivered to users through distribution systems owned and operated by “Recycled Water Agencies.” Recycled Water Producers and Agencies can be one and the same entity.

Recycled water is virtually colorless and odorless, and is allowable for full-body human contact but **not** for direct human consumption. The sensible use of recycled water affords an excellent choice for essentially all non-potable applications. Properly managed, recycled water is safe to use.

WHAT ARE “DUAL SOURCE” SITES?

“Dual source” sites are reuse sites where both potable (domestic or drinking) water and recycled water are present. Dual sources might be necessary on sites where water is normally available for public use. For example, a cemetery may use recycled water for irrigation, but would need a separate potable system with hose bibbs to allow visitors to fill flower urns. “Dual plumbed sites” is a separate term which refers specifically to either buildings that have both recycled and potable water serving

The Recycled Water Treatment Process

- ◆ **Primary Treatment** removes 70 to 85 percent of the organic and inorganic solids that either settle out or float to the top.
- ◆ **Secondary Treatment** mixes the remaining suspended waste solids with microorganisms and air. The micro-organisms convert the waste solids to biomass that settles out.
- ◆ **Tertiary Treatment** filters out most of the remaining solids through a granular media (for example, sand or anthracite coal) or a membrane, with the final product water being disinfected with chlorine or ultraviolet light to kill off bacteria, virus and other microorganisms.

interior fixtures, or individual residences that use recycled water for outside irrigation, and is dealt with later under *Periodic Cross Connection Testing* (page 27). The public must not be allowed access to the recycled water system (such as from hose bibbs). Water quality needs at the use site might also call for two water sources. For example, golf courses may elect to use a potable water supply to irrigate the greens and use recycled water on the fairways.

(**Note:** The potable water used for this purpose is referred to as “non-potable irrigation water” after it has passed through the irrigation system backflow preventer. These water lines are to be used only for irrigation and must not be connected to restrooms, drinking fountains, food service areas, etc.)

On sites with dual sources, the potable supply must be protected with an approved backflow prevention device.

Cross-connections between the recycled water system and the potable water system are strictly prohibited.

BENEFITS OF RECYCLED WATER IRRIGATION

As population growth increases the demand for potable water and the reliability of imported water supplies decreases, the future availability of potable water for irrigation is questionable. Also, the costs of potable water supplies continue to climb, making recycled water more attractive as an alternative water supply.

The amount of recycled water available is generally not affected by drought, meaning customers don't risk losing expensive landscaping due to water shortages and potential mandatory rationing.

Tertiary-treated recycled water can be used for virtually all non-potable applications (see box, right).

Recycled water may also contain an appreciable nutrient content, such as nitrogen, potassium, calcium, magnesium, sulfur, and other macro and micronutrients, which may provide some level of fertilization during the irrigation process. A full recycled water quality analysis can be obtained from the local Recycled Water Agency.

Irrigating with recycled water is making use of a valuable resource that would otherwise be disposed.

TITLE 22 USES FOR TERTIARY-TREATED WATER

Urban Landscape – Parks and playgrounds, schoolyards, unrestricted access golf courses, residential landscaping, freeway and roadway landscaping, cemeteries, ornamental nurseries, sod farms.

Agriculture – Food crops for human consumption, orchards, vineyards, fodder, fiber and seed crops, non-fruit bearing trees, pasture for milking animals, water supply for livestock.

Impoundments – Restricted and unrestricted (full-body contact) recreational impoundments, decorative lakes and fountains, fish hatcheries.

Industrial – Industrial processes (e.g., paper manufacturing, carpet and textile dyeing, boiler feed), cooling towers and air conditioning, non-residential toilet, urinal and floor drains, structural and non-structural fire fighting, commercial laundries, commercial car washes, concrete mixing, construction (dust control, soil compaction, backfill consolidation around pipelines, including potable), street and sidewalk cleaning, flushing sanitary sewers, snow making.

ARE THERE DISADVANTAGES TO USING RECYCLED WATER?

Recycled water must be used responsibly within established guidelines, regulations and permit requirements. Because of its origins and the level of treatment provided, recycled water is not suitable for direct human consumption. Unlike potable water, recycled water can only be used for approved uses, at approved locations, under the provisions of established regulations, agreements or permits. At the time of this writing, there have been no known cases of illness in the State of California due to the proper use of recycled water (according to the State DHS).

In very rare occasions, there may be temporary interruptions of recycled water deliveries, as there are in any utility. Such instances are generally short in duration.

NEED FOR REGULATIONS

Regulations make the use of recycled water possible. Regulations ensure consistent, reliable water quality while being fully protective of the public health. California Code of Regulations Titles 22 and 17 are the two sets of State DHS regulations that accomplish this. Title 22 establishes the requirements for recycled water treatment, quality and allowable use. Title 17 establishes the requirements for backflow protection of the potable water supply.

Copies of these regulations may be obtained from your Recycled Water Agency.

USER'S SUMMARY

Recycled water is a safe and effective resource for nonpotable use. Properly managed recycled water has a very limited health risk, if any. To help in the proper management of recycled water, the State of California, the local city or county Health Department and the Recycled Water Agency have developed rules and regulations for the safe use of recycled water. These rules and regulations are in place to insure that the User, its Site Supervisor and employees, and the public are protected from any health risk (real or perceived) that might be associated with the use of recycled water.

- ☞ Because recycled water is not suited for human consumption, every effort must be made to prevent the user's recycled water system from being cross-connected with the potable (drinking) water system.
- ☞ Plans must be carefully reviewed to ensure against cross-connections and that proper equipment is to be installed (Design Approval, page 10).
- ☞ The recycled water system must be operated under the authority of a "User's Agreement" (page 8) that outlines any special considerations or requirements for the particular use site.
- ☞ The User must designate a "Site Supervisor" (page 14) who is responsible for managing the on-site water system. The Site Supervisor ensures the system is operated within the established guidelines and is properly maintained (Maintenance, page 17).
- ☞ In cooperation with the User, the Recycled Water Agency and/or Producer will make regular inspections of the site (Periodic Site Inspections, page 17).
- ☞ The User must instruct all persons using recycled water of its proper use and precautions (Personnel Training, page 14).
- ☞ All piping and points of connection must be labeled with "Recycled Water -- Do Not Drink" (Marking and Equipment, page 21) and the universal "Do Not Drink" symbol (page 25).
- ☞ All recycled water use areas accessible to the public must be posted with signs visible to the public and must include the statement "Recycled Water -- Do Not Drink" (page 24) and the "Do Not Drink" symbol (page 25).
- ☞ An initial cross-connection test must be conducted to determine if there are any unknown connections between existing irrigation and potable piping prior to construction of retrofit work (Initial Cross-Connection Test, page 26).
- ☞ Prior to connection with the recycled water distribution system, a final cross-connection test must be performed to verify that construction or retrofit work was performed correctly (Final Cross-Connection Test, page 26).
- ☞ In the event of a cross-connection incident, the User must implement an emergency response plan (page 27).

SECTION A GENERAL PROVISIONS

REGULATORY AUTHORITY

Rules and regulations for the end use of recycled water are established and/or enforced by the California Regional Water Quality Control Board (Regional Board), the State DHS and the local city or county Health Department. These rules and regulations are typically contained in a permit from the Regional Board issued to the Recycled Water Agency and/Producer. All facilities using recycled water must be designed and operated to meet the standards of the local governing codes, rules and regulations.

Various regulations for recycled water use may be outlined in the Recycled Water Agency's Recycled Water Ordinance. However, if recycled water service is provided by an Investor Owned Utility, the various regulations for recycled water use are outlined in the Recycled Water Agency's Tariff Schedules as approved by the California Public Utilities Commission.

From time to time there may be amendments to existing regulations. These amendments may be made without the knowledge or consent of the User or the Recycled Water Agency. These amendments will be enforced upon their effective date. The Recycled Water Agency will make every effort to make sure the User is made aware of these changes when they occur.

SYSTEM RESPONSIBILITY

The Recycled Water Agency is responsible for the operation and maintenance of its recycled water distribution system up to the point of connection to the User. However, it's the responsibility of the User to maintain

its recycled water system downstream of the point of connection (usually the meter) with the Recycled Water Agency's distribution system. The User is responsible for ensuring that the recycled water is used on its site according to all the rules and regulations regarding such use. Specifically, the User is responsible for the following:

- ☞ Maintaining the use site's recycled water system.
- ☞ Ensuring that all materials used during the design, construction and maintenance of the system are approved or recommended for recycled water use by the AWWA California-Nevada Section's Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water.
- ☞ Obtaining all permits and payment of all fees required for the establishment, operation and maintenance of the User's recycled water system.¹
- ☞ Reporting all violations and emergencies to the required local governing agencies. A listing of these agencies is provided in Section H.
- ☞ Obtaining prior authorization from the Recycled Water Agency and any required regulatory agency before making any modifications to the approved recycled water system (or the potable water system if it's in close proximity to the recycled system).

¹ Permitting and/or fee assistance may be available from the Recycled Water Agency.

USER AGREEMENT AND PERMITS

A potential User must complete all of the Recycled Water Agency's requirements (for example, permit application) prior to the issuance of a User Agreement. (**Note:** "User Agreement" is the term used to describe any agreement, contract, permit, ordinance, memorandum of understanding or other such document used by the Recycled Water Agency to present the terms and conditions for the use of recycled water by a User.) The Recycled Water Agency reserves the right to alter, on a case-by-case basis, the User Agreement.

RATE AND FEE SCHEDULE

If recycled water is provided by a public entity, such as a water district or municipality, all rates and fees concerning recycled water service will be established and fixed by the Recycled Water Agency.

If recycled water is provided by an Investor Owned Utility, all rates and fees concerning recycled water service shall be established and fixed by the California Public Utilities Commission.

PROTECTION OF PUBLIC HEALTH

The Recycled Water Agency reserves the right to take any action necessary with respect to the operation of the User's on-site recycled water system in order to safeguard the public health.

AUTHORIZED USES

The use of recycled water is limited to those uses approved by the Regional Board or the State DHS. Any other use of recycled water is prohibited without the prior approval, on a case-by-case basis, of the Recycled Water

Agency and the appropriate Regulatory Agencies.

APPROVED USE AREAS

Recycled water may only be used in areas approved by the Recycled Water Agency, following the User's completion of the Recycled Water Agency's application procedure and its meeting all of the requirements of the applicable Regulatory Agencies.

A User may **never** supply recycled water to another owner's adjoining property or to the property of the same User across a street or alley without the prior written approval of the Recycled Water Agency. The User may not give or sell recycled water to another party. Should the property become subdivided, the service will be considered as belonging to the parcel it enters directly. If such a subdivision occurs, or property ownership is transferred, the Recycled Water Agency must be notified.

In any case, recycled water lines are not permitted to cross lot lines. All recycled water delivered to any site must pass through a recycled water meter.

LIABILITY

The User is responsible for the operation and maintenance of the recycled water system downstream of the Recycled Water Agency's point of connection with the User, unless such responsibility is clearly outlined in the User Agreement/Permit (*Enforcement*, page 19).

The Recycled Water Agency shall not be liable for any water damage or other damage caused by the User due to defective or broken plumbing or faulty service, nor shall the Recycled Water Agency be liable for

damage caused by the User's facilities. This includes changes in the recycled water quality that may occur from sitting in ornamental lakes, storage tanks, pipelines, etc.

The Recycled Water Agency may supply water to the affected area either temporarily or permanently from the potable water system with appropriate backflow protection (*Protection of Potable Water Systems*, page 26 and *Back-up Water Source*, page 11).

WATER SUPPLY CONTINGENCY

If at any time during construction or operation of the recycled water system, real or potential hazards are found, the Recycled Water Agency has the right and the responsibility to immediately suspend, with or without notice, recycled water service in the interest of protecting the public health.

SECTION B DESIGN & CONSTRUCTION

DESIGN APPROVAL

Before the construction of any new or major modifications of an existing recycled water system, the design must be submitted for approval by the Recycled Water Agency and the State and local city or county Health Departments. Approval will be contingent upon evidence that all applicable design requirements, rules and regulations for a recycled water system are satisfied. Plans and specifications should include, but not be limited to, the following:

- ☞ A detailed description of the intended use of recycled water, including identification of the area of use.
- ☞ Details showing the complete potable and recycled water systems. For existing facilities converting to recycled water use, details must include the exact location of all existing water piping systems.
- ☞ Details of the intended installation procedures, including as a minimum: backflow preventer locations, color and type of pipe, and additional signage to be used.

CONSTRUCTION

The appropriate regulatory and recycled water agencies shall have the opportunity to make periodic inspections of the User's site during the construction phase, if applicable, to ensure materials and their installation are according to the approved plans and specifications.

The Recycled Water Agency and/or the State, local city or county Health Department or their authorized agents shall inspect the construction and startup of the

User's recycled water system to ensure that it is in compliance with the approved construction plans, rules and regulations. In addition, representatives of the Regional Board and the State DHS may be involved.

This site inspection is to ensure that proper equipment was used, spray patterns are adjusted to ensure proper coverage without excessive overlapping, and there are no cross-connections with the on-site potable water system. Conditions that might create runoff, ponding or windblown spray, especially on slopes must be corrected. Spray patterns must be checked to make sure that they don't encroach upon public facilities such as drinking fountains or areas outside the approved use area. After correction and verification the system will be allowed to use recycled water.

RECYCLED WATER DELIVERY SYSTEM OPERATION

The Recycled Water Agency reserves the right to control and schedule the use of recycled water, if control and scheduling are necessary to maintain acceptable working conditions within that agency's recycled water distribution system. The Recycled Water Agency will administer these and other service conditions.

If the available service pressure is higher than the User can accept, the User shall be responsible for providing a pressure-reducing valve downstream of the service meter. If available pressure is lower than what the User needs, the User shall be responsible for providing booster pumping downstream of the meter. Any pumping of recycled water requires the prior written approval of the Recycled Water Agency.

The Recycled Water Agency must ensure that the quality of the recycled water in its distribution system is not compromised by any User. Therefore the Recycled Water Agency may require backflow protection on the User's recycled water system. This backflow protection might be just downstream of the recycled water meter or at specific, on-site location(s) where an activity of the User (such as fertilizer injection) could degrade the quality of the recycled water in the distribution system. If necessary, details will be included in the User Agreement.

Backflow prevention devices must be approved by the Recycled Water Agency and the appropriate regulatory agencies. Devices must be properly maintained, inspected quarterly and tested at least annually. Backflow prevention assemblies, when required on recycled water systems, must be conspicuously labeled. Based on the provisions of the User Agreement, the Recycled Water Agency may provide the required test equipment.

Backup Water Source

If potable water is to be used as a backup source to the recycled water system, it must be done only through an air-gap separation between the two systems and with the prior approval of the State DHS and the local city or county Health Department. The State DHS permits the use of a "swivel-ell" assembly (see sample schematic, next page) that allows for the use site's water supply to be switched between the recycled and potable water systems, if certain stringent requirements are met.

FIRE PROTECTION SYSTEMS

Some recycled water use sites may also have separate potable water service connections for dedicated fire protection systems. Depending on the Class of fire protection system on the reuse site, if the fire service includes piping for delivery systems outside of buildings and the manner of on-site recycled water usage, then either single check valve, double check valve or RP backflow assemblies may be required at the fire supply meter.

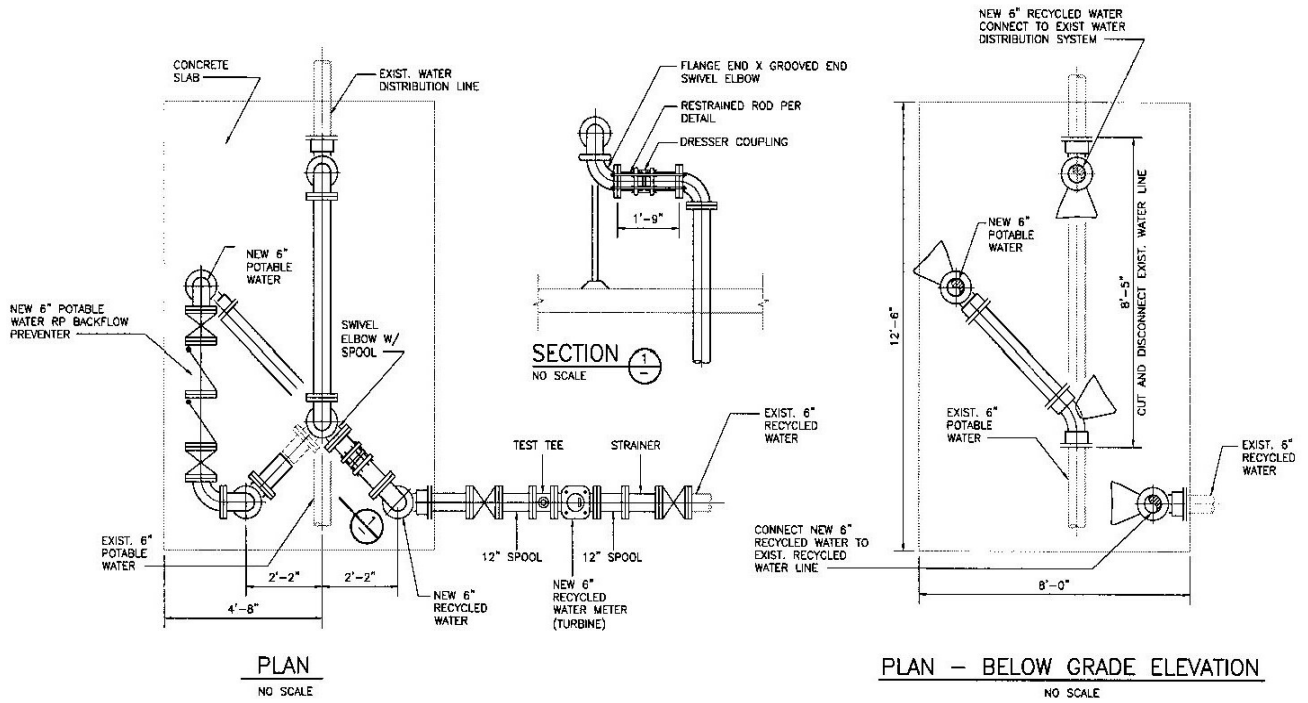
Since requirements vary from place to place, the exact requirements will be provided to the User by the Recycled Water Agency, Regulatory Agency and/or the local city or county Health Department.

PROTECTION OF GROUNDWATER

Irrigation with recycled water within 50 feet or impoundment of recycled water within 100 feet of any drinking water reservoir or well is prohibited. Proposed irrigation with recycled water within 50 feet or impounding recycled water within 100 feet of a non-potable water well requires the approval of the appropriate health agency.

SERVICE STARTUP

Following the acceptance of the User's recycled water system by the Recycled Water Agency, the User may request regular service startup. Upon receipt of the startup request, the Recycled Water Agency will notify the appropriate regulatory agencies, and schedule a final inspection. The startup request shall include the appropriate documentation and any payments and/or fees as indicated in the Recycled Water Agency's User Agreement.



Sample schematic drawing of a "swivel-ell" assembly for a back-up potable water supply.

SECTION C OPERATION & MAINTENANCE

GENERAL

Recycled water service will be provided by the Recycled Water Agency only to those Users who have a current User Agreement for such service, unless otherwise determined by the Recycled Water Agency's Governing Board. This recycled water service can be revoked any time at the discretion of the Recycled Water Agency.

Recycled water service must be made available only in accordance with all applicable Federal, state, and local statutes, ordinances, regulations and contracts, and other requirements including the California Water Code, the California Code of Regulations Titles 17 and 22, and requirements and regulations imposed by the Regional Water Quality Control Board, the State DHS, the local city or county Health Department and/or the recycled water Producer. The User must comply with the conditions of any User Agreement issued by the Recycled Water Agency.

Recycled Water Agencies may not deliver recycled water to Users that do not or will not comply with use site requirements.

CONDITIONS OF SERVICE

The User must comply with the following conditions.

Runoff Conditions

The irrigation systems must be designed, constructed and operated to minimize to the fullest extent practical runoff outside the approved use area.

Ponding Conditions

The irrigation systems must be designed, constructed and operated to minimize to the fullest extent practical ponding within or outside of the approved use area. This does not apply to approved impoundments such as golf course water hazards or decorative lakes.

Windblown Spray Conditions

The irrigation systems must be designed, constructed and operated to minimize to the fullest extent practical windblown spray from leaving the approved use area.

Unapproved Uses

Use of recycled water for any purposes other than those explicitly described in the Recycled Water Agency's water recycling permit is strictly prohibited.

Use in Unapproved Areas

The delivery and use of recycled water for any reason, including approved uses, in areas other than those explicitly approved in the current effective user permit and without the prior approval of the appropriate Regulatory Agencies, is strictly prohibited.

Cross-Connections

Cross-connections, as defined by the California Code of Regulations, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design, construction practice, or system operation, **are strictly prohibited.**

If any cross-connection is discovered, the User shall immediately turn off the system, notify the Recycled Water Agency and implement the *Emergency Cross-Connection Response Plan* (see page 27).

DESIGNATION OF SITE SUPERVISOR

It is the User's responsibility to provide surveillance and supervision of its on-site recycled water system in a way that assures compliance at all times with current regulations and the recycled water permit requirements. The User shall designate, with notification going to the Recycled Water Agency, a Site Supervisor to be the contact person with the Recycled Water Agency. The following are requirements of the Site Supervisor position:

- ☞ Received training or be able to demonstrate knowledge of the application and maintenance of a recycled water system.
- ☞ Be aware of, and familiar with, this Manual.
- ☞ Be available to the Recycled Water Agency at all times and have the authority to carry out any requirements of the Recycled Water Agency.
- ☞ Be responsible for the installation, operation and maintenance of the recycled and potable water systems, and for the prevention of potential hazards.
- ☞ Ensure that notification signs at the use site are properly installed and maintained, and that all recycled and potable water facilities are properly labeled, tagged or otherwise identified.
- ☞ Be knowledgeable of the provisions contained in Titles 17 and 22 of the California Code of Regulations relating to the safe use of recycled water and maintain accurate records.
- ☞ Ensure that all employees of the use site involved with the use of recycled water are instructed in the safe and responsible use and handling of the recycled water.

- ☞ Immediately inform the Recycled Water Agency of any failures, violations and emergencies that occur involving the recycled or potable water systems.
- ☞ Be familiar with the basic concepts of backflow and cross-connection prevention, system testing, and related emergency procedures, and participate in any cross-connection tests.

The Recycled Water Agency must be notified immediately of any change in personnel for the Site Supervisor position. The Recycled Water Agency will provide the Site Supervisor with periodic inspections of the User's system and report all violations to the appropriate Regulatory Agency according to applicable procedures established by law, code, permit or practice.

PERSONNEL TRAINING

All new employees must be trained in the proper use of recycled water. Supervisory personnel and the Site Supervisor should be held accountable to ensure that employees are not using recycled water carelessly or improperly. It is the responsibility of the User to train all operations personnel so they are familiar with the use of recycled water. Any training program should include, but not be limited to, the following:

- ☞ Operations personnel must be aware that recycled water, although highly treated, is non-potable. **Recycled water may never be used for human consumption.**
- ☞ Operations personnel must understand that working with recycled water is safe if common sense is used and appropriate regulations are followed.

- ☞ Operations personnel must understand that conditions such as ponding and runoff are not allowed.
- ☞ Good personal hygiene must be followed (for example, washing hands after working with recycled water).
- ☞ Operations personnel must understand that there is never to be a direct connection between the recycled water system and the potable water system.

PERIODS OF OPERATION

Operation of the User's on-site recycled water system must adhere to the following requirements.

- ☞ Irrigation may only occur during periods of least use of the approved area by the general public. This is usually between the hours of 10 p.m. and 6 a.m.; however, areas where public access is generally prohibited or minimized, such as commercial nurseries and freeway landscaping, may be irrigated at any time.
- ☞ The recycled water system must be operated to prevent overspray or windblown spray into unapproved areas.

- ☞ Even though tertiary-treated recycled water is approved for full-body contact by the State DHS, irrigation of public areas during other times may be performed if the irrigation system is operated manually and is supervised to avoid inadvertently exposing any members of the general public. This provision must be strictly followed.
- ☞ Consideration should be given to allow a reasonable dry-out time before the area is to be used by the public.
- ☞ Automatic control systems are to be used and programmed to prevent ponding and runoff of recycled water.
- ☞ The recycled water system must not be allowed to operate for periods longer than needed to satisfy the landscape water requirements. Recycled water must never be applied at a rate that is greater than the infiltration rate of the soil. Exceptions to this requirement for purposes such as leaching of soil must be specified in the User Agreement.



Inadvertent public contact with recycled water irrigation spray must always be avoided.



Hose bibbs may only be used with recycled water in areas where they cannot be accessed by the general public (such as this commercial nursery), and even those must be properly labeled.

HOSE BIBBS

Hose bibbs or other appurtenances that might allow public access to the recycled water system for unapproved use or for cross-connection to the potable water system are strictly prohibited in all areas accessible to the general public. In these areas, only quick-couplers are allowed and must be of a different type than those that may be used on the use site's potable water system (see page 23). Hose bibbs may be used on the recycled water system in areas that do not allow any public access but must be conspicuously labeled ***“RECYCLED WATER -- DO NOT DRINK”*** in both English and Spanish (or any other language determined by the Water Recycling Agency to be in common use in the area), along with the “Do Not Drink”

symbol (page 25). Workers in these areas must be instructed not to drink from these hose bibbs.

DRINKING FOUNTAINS

Drinking fountains located within the approved use area must be protected from contact with recycled water by direct application through irrigation or other approved use. Lack of protection, whether by design, construction practice or system operation, is strictly prohibited.



The pattern on the walls indicates that this drinking fountain is being sprayed by the irrigation water. If recycled water is to be used, then the spray pattern must be altered or the drinking fountain somehow shielded.

EQUIPMENT CLEANING

Any device, hose, pipe, meter, valve, tank, pump, truck, etc. which has been used with recycled water may not be used to convey potable water nor attached to the potable water system unless it is cleaned and disinfected.

MODIFICATIONS

The User must not make any modifications to its on-site recycled water system (or potable system, if it's in close proximity to the recycled system) without the prior approval of the Recycled Water Agency.

This includes modifications to the approved plans or to an operational system. Detailed plans of any modifications should be submitted to the Recycled Water Agency and the modifications inspected by the Recycled Water Agency before their being placed in operation.

However, routine maintenance of the irrigation system, such as pipeline repairs, sprinkler replacement and other similar activities that don't result in a substantial change in either the recycled or potable water systems, or any agreed to operating plans, don't need prior approval by the Recycled Water Agency.

Emergency modifications or repairs that must be made by the User to its system in order to prevent contamination, damage or a public health hazard are covered under *Emergency Procedures* (page 18).

MAINTENANCE

The User must implement a preventive maintenance program that will ensure that the recycled water system always remains in compliance. A preventive maintenance program should include but not be limited to the following:

- ☞ Regular inspections should be conducted by the User of the entire recycled water system including sprinkler heads, spray patterns, piping and valves, pumps, storage facilities, lakes, controllers, signage, etc. Immediately correct any problems.
- ☞ All notification signs, labels and/or tags should be checked for their proper placement and readability. Replace damaged or unreadable signs, labels or tags.

- ☞ Special attention should be given to spray patterns to eliminate ponding, runoff and wind blown spray conditions.
- ☞ Establish and maintain an accurate records-keeping system of all inspections, modifications and repairs.
- ☞ Broken sprinkler heads, faulty spray patterns, leaking pipes or valves, etc. must be repaired when the malfunction becomes apparent.
- ☞ A maintenance program for backflow prevention assemblies that includes at least annual testing by a tester certified by the American Backflow Prevention Association (ABPA) or AWWA must be carried out. Records of annual tests, repairs and overhauls must be kept by the user with copies forwarded to the Recycled Water Agency and the local city or county Health Department.

PERIODIC SITE INSPECTIONS

Periodic site inspections of the User's recycled water irrigation system are mandated in the Water Code (Section 13523.1(b)(5)). Such inspections include, at a minimum, the visual inspection of all back-flow prevention devices, pump rooms, exposed piping, valves, pressure reducing stations, points of connection, sprinklers, controllers, lakes, storage facilities, signs, labeling, tags, etc. The Site Supervisor's maintenance records should also be inspected.

These inspections are the responsibility of the entity holding the master water recycling permit issued by the Regional Board. This may be the Recycled Water Agency or the Recycled Water Producer, if separate. Whoever the responsible agency is may perform this inspection, or it may be delegated to a third party. The responsible

agency will also determine the frequency of these inspections, based on local conditions. The Recycled Water Agency also reserves the right to make unannounced inspections of the use site's facilities, although at reasonable times.

Upon completion of the inspection, a Site Inspection Report Form (see example, page 34) should be signed and dated by both the Site Supervisor and the entity performing the inspection. The original form should be kept by the inspecting entity with copies going to the Site Supervisor, the Recycled Water Agency and/or Producer and any required regulatory agency.

Should a cross-connection be discovered during the inspection, the *Emergency Cross-Connection Response Plan* (page 27) should be immediately invoked by the Site Supervisor.

EMERGENCY PROCEDURES

In case of a major earthquake, the Site Supervisor should immediately inspect the potable and recycled water systems for damage. If either system appears damaged, both water systems should be shut off at their points of connection. The Site Supervisor should immediately contact the Recycled Water Agency for further instructions.

Emergency Modifications

Emergency modifications or repairs can be made by the User to the recycled water system without the prior approval of the Recycled Water Agency to prevent contamination, damage or a public health hazard. As soon as possible the User must notify the Recycled Water Agency of the emergency modifications and file a written report.

Unauthorized Discharge

It's the responsibility of the User to report to the Recycled Water Agency all system failures that result in an unauthorized discharge of more than 50,000 gallons of tertiary treated recycled water (or 1,000 gallons for any lesser quality recycled water). An immediate oral report followed by a written report is required.

Contamination of Drinking Water

In case of contamination of the potable water system due to a cross-connection on the User's premises, the Recycled Water Agency and the local city or county Health Department must be immediately notified by the User (see page 36). The User is to immediately invoke the *Emergency Cross-Connection Response Plan*.

VIOLATIONS

The Recycled Water Agency reserves the right to decide if a violation of the conditions under which the User Agreement was issued has occurred. Violations may include non-compliance of any of the following prohibitions: runoff conditions, ponding conditions, windblown spray conditions, leaks or spills resulting from broken or damaged pipelines or appurtenances, unapproved uses, disposal in unapproved areas, cross-connections, unprotected drinking fountains and unauthorized or prohibited use of hose bibbs, whether willful or by accident. Any willful or accidental act of noncompliance with any existing Federal, state or local ordinance, code, law or statute regulating the use of recycled water constitutes a violation.

NOTIFICATION

It is the responsibility of the Site Supervisor to immediately notify the Recycled Water Agency of any failure or cross-connection in

his/her recycled or potable water system, whether or not he/she believes a violation has occurred. It is also the responsibility of the Site Supervisor to immediately notify the Recycled Water Agency of any violation he/she believes might imminently occur because of any action the User's personnel might take during the operation of the recycled or potable water systems.

If there are any doubts whether a violation has occurred, it is the responsibility of the Site Supervisor to report each occurrence to the Recycled Water Agency so a decision can be made. It is then the Recycled Water Agency's responsibility to notify the Recycled Water Producer (if a separate entity) holding the master water recycling permit from the Regional Board and local governing agencies of any violations. These agencies are listed in Section H.

CORRECTIVE ACTION

If the Recycled Water Agency's investigation reveals that a violation has occurred on the reuse site, that agency must immediately notify the User of the violation and what corrective actions must be taken. It is the responsibility of the User to immediately initiate corrective action to eliminate the violation. If the Recycled Water Agency believes the violation constitutes a hazard to the public health, the Recycled Water Agency must immediately stop recycled water service to the User. It will be at the discretion of the Recycled Water Agency to decide if a violation has been adequately corrected.

The Recycled Water Agency may impose a startup fee upon resumption of service to a User whose service has been terminated, depending on the provisions of the User Agreement.

ENFORCEMENT

The Recycled Water Agency shall enforce all existing regulations concerning the use of recycled water and/or recycled water systems. Regulations concerning the use of any recycled water or recycled water system shall be applied with equal force and effect to any person, persons, or firm, public or private. **There will be no deviations from these regulations** except upon written authorization of the Recycled Water Agency, acting within applicable regulations. An appeal procedure may be provided for in the User Agreement or in the Recycled Water Agency's rules and regulations, and the action of the Recycled Water Agency will be final.

CAUSES FOR TERMINATION OF SERVICE

The Recycled Water Agency reserves the right to revoke a User's Agreement if any or all of the service conditions are not satisfied at all times. Service to a User may be terminated any time if:

- ☞ The Recycled Water Agency's distribution system is not capable of supplying recycled water.
- ☞ The quality of the recycled water does not comply with the requirements of the Regulatory Agencies.
- ☞ The User's operation does not conform to all applicable regulations, permit requirements and/or the terms of the User's agreement.
- ☞ There is nonpayment of service fees and charges by the User.

SECTION D MARKING & EQUIPMENT

GENERAL

All materials, apparatus, piping, valves, controllers, sprinkler heads, pumps etc. for new recycled water irrigation systems must be approved for use in a pressurized recycled water system and installed according to approved plans. The recycled water system must conform to the AWWA California-Nevada Section's Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water. Deviations will not be allowed without prior approval. System installation must conform to the Uniform Plumbing Code and all other local codes, rules and regulations.

The approved use area must be clearly marked. All outlets from the recycled water system must be marked **"CAUTION -- RECYCLED WATER -- DO NOT DRINK."** In addition, signs must be posted at all entrances to the use site indicating that recycled water is used for irrigation purposes. The "Do Not Drink" symbol (page 25) must be present on all signs. Recycled Water Agencies may also choose to require the signs to include translations into the appropriate foreign language(s), as not all areas have Spanish as the second language.

PIPING, BELOW-GRADE

All new piping must be installed according to the approved plans and marked as required. Installation must be in accordance with the latest edition of International Association of Plumbing and Mechanical Officials (IAPMO) Standard IS-8. Fittings, primers and solvents must be IAPMO listed. All new recycled and potable water lines (pressure/non-pressure), new and existing valve boxes and appurtenances must be

identified to clearly distinguish between recycled water and potable water systems.

Identification of Recycled Water Lines

All new, buried recycled water lines (pressure/non-pressure) must be extruded purple-colored Schedule 40 (minimum) PVC pipe with continuous wording **"CAUTION -- RECYCLED WATER"** printed on opposite sides of the pipe. The use of continuous lettering on 3-inch minimum width purple tape with 1-inch black or white contrasting lettering bearing the continuous wording **"CAUTION -- RECYCLED WATER"** permanently affixed at 10-foot intervals atop all horizontal piping, laterals and mains is an acceptable alternative to the purple pipe. Identification tape must extend to all valve boxes and/or vaults and exposed piping.



Recycled water pipeline installation with continuous purple warning tape.

Piping buried under pavement must be sleeved with the sleeve being at least two (2) inches larger in diameter than the irrigation pipe.

When recycled and potable water lines cross, the recycled water line must be located at least 1-foot below the potable water line. If this separation is not possible, then either the recycled or potable water line must be sleeved to 10 feet on either side of the crossover. Parallel recycled and potable water lines must be at least 10 feet apart, or at least 4 feet, if the recycled line is enclosed in a sleeve.

Identification of Potable Water Lines

New buried potable lines must be identified by continuous lettering on 3-inch minimum width blue tape with 1-inch white lettering bearing the continuous wording **“POTABLE WATER”** permanently affixed at 10-foot intervals atop all horizontal piping, laterals and mains. Identification tape must extend to all valve boxes, vaults and exposed piping.

Identification tape is not necessary for extruded blue-colored PVC with continuous wording **“POTABLE WATER”** printed in contrasting lettering on opposite sides of the pipe.

Identification of Non-Potable Water Lines

Non-potable water is water supplied from the potable water system through an appropriate backflow preventer. All non-potable irrigation/industrial water lines (pressure/non-pressure) must be identified by continuous lettering on 3-inch minimum width yellow tape with 1-inch contrasting lettering bearing the continuous wording **“NON-POTABLE WATER -- DO NOT DRINK”** permanently affixed at 10 foot intervals atop all horizontal piping, laterals and mains. Identification tape must extend to all valve boxes and/or vaults, exposed piping, hydrants and quick couplers.

Identification of Existing Below-Grade Water Lines

Existing below-grade piping, whether recycled, potable or non-potable, need not be marked unless the piping becomes exposed, such as during installation of new pipe or maintenance of existing pipe. The exposed section should be appropriately marked (as recycled, potable or non-potable) to the extent feasible.

PIPING, ETC., ABOVE-GRADE

All above-grade recycled water pipelines must be appropriately labeled and color-coded purple to differentiate recycled water pipelines from potable and non-potable water pipelines. If purple pipe is not used, recycled water pipelines may be wrapped with purple warning tape having the words **“CAUTION -- RECYCLED WATER”** visible in contrasting black letters. Flexible conduits or hoses must be clearly marked **“CAUTION -- RECYCLED WATER”** with each adapter or fitting painted purple.

Above-grade potable water pipelines must be labeled and color-coded blue to differentiate potable water pipelines from recycled and non-potable water pipelines. Potable water pipelines may be wrapped with blue identification tape having the words **“POTABLE WATER”** visible in contrasting white letters.

Above-grade non-potable water pipelines must be appropriately labeled and color-coded yellow to differentiate non-potable water lines from recycled water and potable water lines. Non-potable water lines may be wrapped with yellow identification tape having the words **“NON-POTABLE WATER -- DO NOT DRINK”** visible in contrasting letters.

Exposed valve boxes, vaults, quick coupling valves, outlets and related appurtenances must be color-coded, labeled or tagged, to differentiate recycled water from potable water (that is, “**CAUTION -- RECYCLED WATER -- DO NOT DRINK**” in black or white contrasting lettering on a purple background, or “**POTABLE WATER**” in white lettering on a blue background or “**NON-POTABLE WATER -- DO NOT DRINK**” in contrasting lettering on a yellow background).

Tags must be identified with the appropriate wording on both sides. Tags identifying recycled water must have both the appropriate wording and the “Do Not Drink” symbol (page 26).

VALVES

Quick Coupling Valves

New quick coupling valves, made specifically for recycled water use, should be 3/4-inch or 1-inch nominal size and of brass construction with a normal working pressure of 150 psi. The covers on all new quick coupling valves must be permanently attached and made of purple rubber or vinyl with the words “**RECYCLED WATER**” imprinted on the cover, and must be provided with a lock. To prevent unauthorized use, the valve should be operated only with a special coupler key with an acme thread for opening and closing the valve. New quick coupling valves should be installed approximately 12 inches from walks, curbs, headboards or paved areas. All new and existing quick coupling valves must be identified with an identification tag and installed in a marked valve box.



Quick coupler and valve box

Gate Valves

New gate valves should be installed in a marked valve box with crushed rock in the base and a notification tag on the valve operator.

Remote Control Valves

New and existing remote control valves should be installed in a marked valve box with crushed rock in the base and an identification tag on the operator. For each valve system, remote control valves should be adjusted so the most remote sprinkler heads operate at the pressure recommended by the manufacturer giving a uniform distribution of water.

SPRINKLER HEADS

New sprinkler heads must be of the size, type, pressure, radius of throw and discharge as indicated on the approved plans. All new sprinkler heads, either permanent or temporary, should be of the approved type for use with recycled water and create the minimum amount of mist. Drainage through sprinkler heads is prohibited, and an anti-drain valve must be installed in the sprinkler riser as needed. Anchors on sprinkler risers should be provided as needed and maintained. Sprinkler heads must be kept in good repair at all times.

SYSTEM CONTROL DEVICES

New system controllers must be automatic with multiple start/stop times for any 24-hour period and installed according to the approved plans and local codes. Two, color-coded diagrams must be prepared for the station and system for each controller. Each diagram should be sealed in plastic with one copy placed in the controller box and the other given to the Recycled Water Agency. All controllers must be marked with the words "**RECYCLED WATER**" in black 1-inch high letters on a purple background.

STORAGE TANKS & IMPOUNDMENTS

All storage tanks, either stationary or portable, must be structurally sound and free from leaks. Each tank must be conspicuously marked with signs with the words "**RECYCLED WATER -- DO NOT DRINK**" in black letters 2-inches high on a purple background. The "Do Not Drink" symbol (page 25) should be present on all recycled water storage tanks.

Impoundments (lakes) that receive recycled water are classified as "unrestricted" (swimming and body contact allowed), "restricted" (no swimming or body contact, but non-contact activities such as fishing and boating allowed) or "ornamental" (no recreational activities allowed). All of these impoundments must have the recycled water valves and outlets marked or tagged with the words "**RECYCLED WATER -- DO NOT DRINK.**" At restricted and ornamental impoundments, adequate measures must be taken to prevent body contact. All recycled water impoundments must be kept separate from potable water wells and reservoirs.

If any storage tank or impoundment receives both recycled and potable water, the potable water supply must be properly air-gapped to avoid a cross-connection.

OTHER DEVICES

All air/vacuum relief valves, valves, pressure reducing valves, pumps, pump control valves, etc., must be tagged or labeled indicating whether it is on the recycled water, non-potable water or potable water system. Recycled water tags or labels must have a purple background with black lettering stating "**RECYCLED WATER -- DO NOT DRINK.**" The "Do Not Drink" symbol (page 25) must be present.

Potable water tags or labels must have a blue background with "**POTABLE WATER**" in white lettering.

Non-potable water tags or labels must have a yellow background with "**NON-POTABLE**" in black lettering.

VEHICLE IDENTIFICATION

Any vehicle used to transport recycled water must be clearly marked with labels or signs that contain the words "**RECYCLED WATER -- DO NOT DRINK**" in black 2-inch high letters on a purple background and include the "Do Not Drink" symbol (page 25). One label or sign should be placed on the tank closest to the driver's door, with a second label or sign being placed on the rear surface of the tank at the outlet. All labels and signs must be placed where they can easily be seen by the personnel using the vehicle.

Any vehicle used for the transportation or storage of recycled water must not be reused for the transportation or storage of potable water, unless it has been flushed, disinfected and tested.

POSTING APPROVED USE AREA

Posting the use of recycled water is required at all entrances to the User's facility, and placed where they can be easily seen. The signs must indicate that "**RECYCLED WATER**" is in use. In addition, all signs must include the "Do Not Drink" symbol (page 25) and use the words "do not drink," in both English and Spanish (or other locally used language). Additional signing may be required by the Regulatory Agency on a case-by-case basis.



Recycled water notification signs do not need to include such words as "Caution," "Warning" or "Danger."

“DO NOT DRINK” SYMBOL



SECTION E CROSS-CONNECTION CONTROL

PROTECTION OF POTABLE WATER SYSTEMS

On “dual source” sites where both potable water and recycled water exist, the potable supply must be protected against accidental cross-connections. In lieu of an air-gap, reduced-pressure principal backflow prevention (RP) devices are generally approved by the State DHS and the Recycled Water Agency. This is done according to the approved site-specific drawings.

Backflow prevention devices must be approved by the Recycled Water Agency and the appropriate regulatory agencies before installation. If an RP is installed, it must be tested annually. The device testing must be done by a backflow prevention device tester certified by the ABPA or the AWWA. Test reports must be provided to the Recycled Water Agency and the regulatory agency requiring the test. Records must be maintained for at least three (3) years by both the User and the Recycled Water Agency.

INITIAL CROSS-CONNECTION TEST

Prior to retrofit work or construction, a initial cross-connection inspection and test must be coordinated by the Recycled Water Agency, with all appropriate health agencies being notified. This test should follow the general guidelines outlined in Section F. The purpose of the test is to determine if there are any connections between the existing irrigation system and the potable water system prior to construction.

During the lifetime of the recycled water system, the Recycled Water Agency must periodically inspect the recycled water system to ensure compliance with all applicable rules and regulations. Additionally, the Recycled Water Agency may be required to perform periodic inspections of the system for cross-connections (including shut-down tests, if appropriate), depending on the use site characteristics.

FINAL CROSS-CONNECTION TEST

On sites where both recycled and potable water are present, a cross-connection test must be performed using potable water supplied through an approved backflow prevention device before connecting the User's on-site recycled water system to the Recycled Water Agency's distribution system. This on-site test is to ensure the absolute separation of the recycled and potable water systems. The Recycled Water Agency shall coordinate the scheduling of the cross-connection test. Periodic testing using the same procedures may be required in the future, depending on the use site's characteristics. A written report documenting the test results must be submitted to the Recycled Water Agency, the State DHS and the local city or county Health Department following completion. A pressure (shut down) test procedure is detailed in Section F.

As an alternative to the pressure test, a dye test may be performed by charging the recycled water system with potable water containing a food grade colored dye. The unpressurized potable water system is then checked for any evidence of the colored dye. If the dye is found, a cross-connection

exists. This test itself must be done in a way that does not create a cross-connection.

Upon the successful completion of one of the above tests, insuring no cross-connections between the potable and recycled water systems, the User's irrigation system may be connected by the Recycled Water Agency to the recycled water distribution system.

PERIODIC CROSS-CONNECTION TESTING (PCCT)

Periodic cross-connection shutdown testing must be done at least once every four (4) years for "dual-plumbed" sites, unless visual inspections or major on-site water system changes reveal a need for more frequent testing. The Water Recycling Criteria in Title 22 specifically defines "dual-plumbed" sites as either buildings with fixtures served with recycled and potable water or individual residences with recycled water in the irrigation system.

Other "dual-source" use sites that don't fall under either of these categories may be required to perform periodic cross-connection tests if the use site characteristics indicate a greater risk of potential cross-connections, or if any reuse site undergoes significant modifications of the potable or recycled water systems. The Recycled Water Agency, in cooperation with the local city or county Health Department, will make the determination if such a test is required.

This test must follow the same procedures use for the final cross-connection test (either shut-down or dye test). Before the test is performed representatives of the State DHS, the local city or county Health Department, Site Supervisor, Recycled Water Agency, and any other required

regulatory agency must be notified. The Recycled Water Agency will coordinate the scheduling of the test. A sample Test Notification Form is on page 36.

Written verification of the test results must be provided by the Recycled Water Agency to the Site Supervisor, State DHS, local city or county Health Department, local building authority and any other required regulatory agency. All provisions of Title 17, Chapter 5, Section 7601 of the Code of Regulations, concerning protection of drinking water systems against cross-connections and backflow, must be strictly complied with.

EMERGENCY CROSS-CONNECTION RESPONSE PLAN

In the event that a backflow incident or cross-connection is suspected or occurs the following procedures must be implemented immediately.

1. Keep the potable water system pressurized and, if possible, post "**DO NOT DRINK**" signs at all potable water fixtures and outlets.
2. Immediately shut down the recycled water supply to the facility at the meter.
3. Notify the Recycled Water Agency and the appropriate Health Department(s) by phone (see list on page 37). This notification is to be followed by a written notice within 24 hours. The written notice is to include an explanation of the nature of the cross-connection, date and time discovered, and the steps taken to mitigate the cross-connection(s).

4. Collect water samples from the potable water system and perform a 24-hour bacteriological analysis (as instructed by the Recycled Water Agency). Water samples should be collected from the closest possible point to the cross-connection.
5. Identify the cause and location(s) of backflow and eliminate the cross-connection(s).
6. Conduct a cross-connection test in coordination with the Recycled Water Agency and the appropriate Health Departments to verify that all cross-connections have been eliminated.
7. Obtain approval from the Recycled Water Agency and the local city or county Health Department before returning the recycled water system to service.
8. If the bacteriological analysis conducted in Step 4 is positive, flush the potable water system and disinfect by maintaining a chlorine residual of at least 50 mg/L for 24 hours. Otherwise proceed to Step 11.
9. Flush the potable water system after 24 hours and perform standard bacteriological analysis.
10. If the results from Step 9 are acceptable, proceed to Step 11. Otherwise, repeat Steps 8-9.
11. Obtain final approval from the Recycled Water Agency and the State, local city or county Health Department before removing signs.

SECTION F REUSE SITE PRESSURE-TESTING PROCEDURE

The following are general guidelines for the testing procedure and may be modified with the approval of the State, local city or county Health Department.

1. Potable water must be used during the initial testing of the on-site recycled water system, with the potable water supply separated from the proposed recycled water system by an approved reduced pressure principle backflow prevention assembly until the system has been checked for cross-connections.
2. The recycled water system should be completely drained and remain deactivated for an adequate period of time based on site-specific characteristics.
3. At the end of the shutdown period, all of the recycled water outlets should be tested throughout the entire site for cross-connections by checking each outlet for flow.
4. The recycled water system should then be checked at the quick couplers (located on the normally pressurized main irrigation line) or by cycling the irrigation clocks (observing the spray decrease) to determine if there is any flow. If there is no flow detected in any of the outlets that would suggest a cross-connection, the recycled water connection may then be reactivated.
5. The potable water to the use site will be shut off at the potable water meter. The potable water system must be completely drained and remain deactivated for an adequate period of time based on site-specific characteristics.
6. At the end of the shutdown period, all of the use site's potable water fixtures should be tested for cross-connections by operating each fixture and checking for flow.
7. The potable water inlet should then be checked to detect if there is backpressure or significant backflow. If no flow is detected at the inlet or in any of the fixtures that would suggest a cross-connection, the potable water connection may then be reactivated.

SECTION G SAMPLE FORMS AND SITE SPECIFIC DETAILS

SUMMARY OF STEPS TO OBTAIN RECYCLED WATER

NOTE: The following sequence of events is general in nature and is for illustration only. Please check with your Recycled Water Agency for the appropriate process.

Potential User contacts the Recycled Water Agency for recycled water service, and the Agency responds in a timely manner.

Potential User must have irrigation plans stamped by a registered landscape architect or a registered civil engineer.

Potential User submits a recycled water application (an example is shown on page 33) and pays the application fee. The User agreement is explained and signed at this time.

The potential User shall apply to the Recycled Water Agency for a recycled water meter. A construction meter for potable water and an appropriate backflow prevention device may be required for temporary water and system testing before being served recycled water.

Recycled Water Agency notifies the State, local city or county Health Department of the submitted application.

Potential User submits two sets of plans each to the Recycled Water Agency and to either State DHS or the local city or county Health Department for plan check, and pays the applicable plan check fees.

Recycled Water Agency, State DHS, and the local city or county Health Department complete plan check and return plans to the potential User for corrections.

After all corrections are made the potential User resubmits the marked plan checked prints along with a final set of plans. If no more corrections are to be made, the Recycled Water Agency, State DHS, and the local city or county Health Department will approve the original plans. Four (4) sets of prints of the signed plans each should be submitted to these agencies.

A pre-job meeting (preliminary inspection) is held before construction with the Recycled Water Agency's representative, potential User and the contractor. This meeting is to cover the plan's general notes, specific job requirements and cover any questions. Following this meeting, an initial cross-connection test is to be conducted on existing systems with the state and/or city or county health agencies.

The potential User may begin construction, according to the approved plans, contingent upon any other required permits or approvals being obtained. Approvals for deviations in the approved plans are to be sought as they occur.

All work during construction must be inspected by the Recycled Water Agency and/or the local city or county Health Department **before** backfilling any buried piping. If any reclaimed or potable water piping is installed before plan check approval and/or inspection, all or any portion of the piping system may be required to be exposed and corrected as necessary.

After construction is completed, the Recycled Water Agency and either State DHS or the local city or county Health Department must be notified for the final inspection and cross-connection test utilizing potable water supplied through an approved backflow prevention device on dual source sites. The recycled water meter is installed, potable water severed and conversion made to recycled water. During this walk through flow adjustments are made, tagging is inspected, and coverage is checked. A thorough cross-connection test is conducted at this time to verify that construction was performed correctly. The Recycled Water Agency and/or the local city or county Health Department will generate a punch list of corrections to be made if necessary.

A follow-up walk through will be called for after all corrections from the first walk-through are completed if required. This walk-through will inspect to see that all corrections are complete, including color-coded plans for each controller that are accurate and placed at each controller cabinet. Upon the successful completion of the inspection and cross-connection tests, the User will be granted permission for the normal operation of the system. At this time the Recycled Water Agency's inspector will discuss with the User and the User's Site Supervisor conditions for operation, inspections etc.

LOCAL CONTACTS

SITE:

LOCATION:

SUPERVISOR:

PHONE:

RECYCLED WATER AGENCY CONTACTS

WATER OPERATIONS:

PHONE:

SUPERVISOR:

PHONE:

RECYCLED WATER INSPECTOR:

PHONE:

RECYCLED WATER AGENCY'S ENGINEER:

PHONE:

RECYCLED WATER IRRIGATION
USER APPLICATION

Today's Date: _____
Tract No. _____ Project Name: _____
Location: _____ or Brief Legal Description: _____

Type of Development: _____

Description of proposed uses of recycled water: _____

Expected date to commence recycled water service (Month/Year) _____
Estimated Water Requirements:

	<u>Acres</u>	<u>Average AF/YR</u>	<u>Peak Demand (GPM)</u>
Landscape Irrigation:	_____	_____	_____
Park:	_____	_____	_____
Open Space:	_____	_____	_____
School:	_____	_____	_____

Owner: _____	Engineer: _____
Address: _____	Address: _____
City: _____	City: _____
State: _____ Zip: _____	State: _____ Zip: _____
Phone: (____) _____	Phone: (____) _____
Contact: _____	Contact: _____

RECYCLED WATER - SITE INSPECTION REPORT

Site: _____ Date: _____

Inspected By:

Title: _____ Agency: _____

AREA INSPECTED	NO	YES
- PIPING -		
Piping properly marked?	___	___
Valves etc. properly marked?	___	___
Has piping been modified?	___	___
If yes, are modifications approved?	___	___
Points of connection properly marked?	___	___
Piping System "Leak"?	___	___
- SIGNING -		
Are all signs properly placed?	___	___
Are all signs legible?	___	___
Are tags visible and legible?	___	___
- BACKFLOW PREVENTION -		
Backflow Prevention Device installed?	___	___
Does the device appear damaged?	___	___
Is the device leaking?	___	___
Is the device unobstructed?	___	___
Is Recycled Water being used for its approved purpose?	___	___

Comments: _____

Signed: _____ Date: _____

CROSS-CONNECTION TEST NOTIFICATION FORM

Test Date: _____ Test Time: _____

Site Name: _____

Site Address: _____

Recycled Water Agency: _____

Contact Person: _____ Phone: _____

Agencies Notified: California Department of Health Services, Drinking Water Field
Operations Branch

CROSS-CONNECTION NOTIFICATION RSVP FORM

Site Address: _____

Test Date: _____

Agency/Company: _____

Representatives Attending: _____

(Please return to requesting party within 10 days of scheduled test)

SECTION F LOCAL GOVERNING AGENCIES

(Local Recycled Water Agency to insert own name, address, phone number, and modify contact information below for its own region)

Regional Water Quality Control Board

Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
(213) 576-6600

County of Los Angeles Department of Health Services

Cross Connection and Water Pollution Control
5050 Commerce Drive
Baldwin Park, CA 91706
(626) 430-5290

State of California Department of Health Services

Drinking Water Field Operations Branch
1449 West Temple Street
Los Angeles, CA 90026
(213) 580-5723

SECTION G DEFINITIONS

Whenever the following terms, or pronouns used in their place, occur in this Manual the intent and meaning shall be interpreted as follows:

Air Gap Separation – A physical break between a water line and a receiving tank or reservoir which is at least double the diameter of the pipeline vertically above the rim of the tank or reservoir, and in no case less than one-inch.

Applicant – An Owner or authorized representative of a potential reuse site who applies for recycled water service under terms of the appropriate regulations. An approved Applicant becomes a User.

Approved Backflow Prevention Assembly – A device installed to protect the potable water supply from contamination by nonpotable water and is approved by the State of California.

Approved Use – An application of recycled water in a manner, and for a purpose, designed in a user agreement issued by the Recycled Water Agency and in compliance with all applicable Regulatory Agency requirements.

Approved Use Area – A site with well-defined boundaries, designated in a user agreement issued by the Recycled Water Agency to receive recycled water for an approved use and acknowledged by all applicable Regulatory Agencies.

Chief Executive Officer – The highest-ranking management official of the Recycled Water Agency.

Construction Use – An approved use of recycled water to support approved construction activities, such as soil compaction and dust control during grading.

Cross-Connection – Any physical connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome and potable for human consumption.

Graywater – Untreated domestic wastewater from bathtubs, showers, bathroom wash basins, clothes washing machines, and laundry tubs, but excluding toilets, kitchen sinks, dishwashers, photo development sinks and laundry water from soiled diapers. This is **not** the same as treated recycled water.

Infiltration Rate – The rate at which the soil will accept water as applied during irrigation, expressed in inches per hour.

Inspector – Any person authorized by the Recycled Water Agency or the local health agencies to perform inspections on or off the Users site before construction, during construction, after construction and during operation.

Irrigation Period – The time, from start of water flow to end, which a specific area receives recycled water by direct irrigation application, no matter how often the specific area is irrigated - that is length of the duty cycle.

Irrigation Use – An approved use of recycled water for landscape irrigation as defined for recycled water under Title 22, Chapter 3 of the California Code of Regulations.

Landscape Impoundment – An open body of recycled water on a use site that is utilized for aesthetic enjoyment or which otherwise serves a function not intended to include public contact.

Local City or County Health Department – This agency is the local health protection agency for the municipality in question.

Nonpotable Water – The water that has not been treated for human consumption in conformance with the latest edition of the United States Environmental Protection Agency's Drinking Water Standards, the California Safe Drinking Water Act, or any other applicable standards. This also refers to irrigation or industrial process water derived from a potable water system through an approved backflow prevention device that may be subject to contamination (e.g., through back-siphonage).

Off-site – Designates or relates to recycled water facilities up to and including the water meter that are owned and operated by the Recycled Water Agency.

On-site – Designates or relates to facilities owned and operated by a User.

Operations Personnel – Any employee of a User, whether permanent or temporary, or any contracted worker whose regular or assigned work involves the supervision, operation or maintenance of equipment on any portion of on-site facilities using recycled water.

Operator – Any person, persons or firm, who by entering into an agreement with a User is responsible for operating on-site facilities.

Owner – Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) year, for property for which recycled water service has been requested or established.

Point of Connection – This is the point where the User's system ties to the Recycled Water Agency's system, usually at the water meter.

Ponding – Unintentional retention of recycled water on the surface of the ground or other natural or manmade surface for a period following the cessation of an approved recycled water use activity such that a hazard or potential hazard to the public health results.

Potable Water – That water that is pure and wholesome, does not endanger the lives or health of human beings, and conforms to the latest edition of the California Safe Drinking Water Act, or other applicable standards.

Public – Any person or persons at large who may come in contact with facilities and/or areas where recycled water is approved for use.

Rate and Fee Schedule – The schedule of all rates, charges, fees and assessments to be made concerning the use of recycled water served by the Recycled Water Agency as approved or as amended by the Recycled Water Agency.

Note: If the recycled water provided by an investor-owned utility functioning as the Recycled Water Agency, rates and fees are approved or amended by the California Public Utilities Commission.

Recreational Impoundment – An open body of recycled water located on a use site that may be used for unrestricted body contact (e.g., swimming, wading) or restricted non-body contact (e.g., boating, fishing) recreation.

Recycled Water – Nonpotable water that is highly treated to the California Code of Regulations, Title 22, Chapter 3 and used for approved purposes other than drinking water.

Recycled Water Agency – The local purveyor or producer of recycled water for the specified service area (public or private).

Regulatory Agencies – Those public agencies legally constituted to protect the public health and water quality, such as the State Department of Health Services, the California Regional Water Quality Control Board and the local city or county Health Department.

Runoff – When recycled water is intentionally or unintentionally allowed to drain outside the approved recycled water irrigation area.

Service – The furnishing of recycled water to a User through a metered connection to the on-site facilities.

Site Supervisor – A qualified person designated by the User to provide liaison with the Recycled Water Agency. This person should be available to the Recycled Water Agency at all times, should have the knowledge and authority to carry out any requirements of the Recycled Water Agency, and should be responsible for the installation, operation and maintenance of the reclaimed and potable water systems and also prevention of potential hazards.

State Department of Health Services – Shall be the State of California Department of Health Services, Drinking Water Field Operations Branch.

Unauthorized Discharge – Any release or spill of recycled water that violates the rules and regulations of the Recycled Water Agency or all applicable Federal, State or local statutes, regulations, ordinances, contracts or other requirements.

User – Any person, persons or organization (including, but not limited to, any private company or corporation, public utility, municipality or other public body or institution) issued a recycled water Users' Permit by the Recycled Water Agency. The User and Owner may be the same.

User Agreement – An agreement issued by the Recycled Water Agency to a recycled water service Applicant after the satisfactory completion of the service application procedures. This Agreement forms a service agreement between the User and the Recycled Water Agency that legally binds the User to all conditions stated in the Agreement and all applicable Regulatory Agency requirements.

User Agreement (For Users Served by an Investor-Owned Utility) – An agreement shall consist of the signed Application, the User Manual, a copy of the applicable Regional Water Quality Control Board water recycling permit and the California Public Utilities Commission approved Tariff Schedules. These form a service agreement between the User and the Recycled Water Agency that legally binds the User to all conditions stated in the Agreement and all applicable Regulatory Agency requirements.

Violation – Noncompliance with any condition or conditions of the User Agreement, water recycling requirements issued the Regional Water Quality Control Board and/or Title 22, Chapter 3 of the California Code of Regulations by any person, action or occurrence, whether willfully or by accident.

Windblown Spray – Dispersed, airborne particles of recycled water that can be transmitted through the air to locations other than those approved for the direct use of recycled water.

SECTION H TIPS FOR SUCCESSFUL USAGE

The recycled water that is delivered for beneficial reuse has been “manufactured” at a water reclamation plant, resulting in a quality that meets very strict DHS standards for safety. Even though it is virtually impossible to distinguish the recycled water, as described in this Manual, from potable water supplies. However, there are general chemical differences that may require Users to make changes in their landscaping practices. The following few pages is not meant to be a comprehensive discussion of issues that might arise when irrigating with recycled water; but only the most common areas of concern.

SALT LEVELS

Salt is a difficult and expensive constituent to remove from water; consequently, it and other minerals that are not often removed by conventional treatment processes. The salinity, or salt levels in recycled water can vary from treatment plant to treatment plant, but are generally higher than the local domestic water supply. Therefore, Users may want to carefully consider their selection of plants, soil composition and irrigation practices.

Type of Plants

For the most part, turf grass is very tolerant of higher salt levels, as are many ornamental trees and shrubs. Additionally, experience has shown that most flowering plants thrive with the use of recycled water.

However, not all landscape plants are suitable for irrigation with recycled water. Most notable of these are azaleas, which

are very salt **intolerant** and should be avoided when using recycled water.

Soil Types

The type of soil present at a User's site strongly influences how the salt in the recycled (or any) water affects plant growth and health. Well draining soil is preferable; however, many areas have a clay component in their soil. Clay tends to hold on to salt, and can actually cause the soil to stop draining altogether. This particular phenomenon is the direct result of elevated levels of sodium and is measured by its ratio to calcium and magnesium (Sodium Adsorption Ratio, or SAR). The presence of self-regenerating water softeners that discharge sodium-laden brine into the sewer system are big contributors to elevated sodium levels in the recycled water.

Problems with soil drainage due to clay soils and an elevated SAR can be rectified by the application of gypsum (calcium), which loosens the bound up clay and allows for water to drain through the soil.

However, when dealing with clay soil drainage issues, some recycled water users have rejected gypsum as it increases the salinity and instead opted for an acid injection system. Buffered acid can be added to break up the bicarbonate binding and salt buildup at the surface level in clay soils and allow improved penetration to the root zone.

Irrigation Schedule

Many irrigation systems schedule watering for short periods of time, perhaps many nights a week. Depending on the levels of salt in the recycled water

and the soil type (sand vs. clay), a switch to longer irrigation run times done on a less frequent basis may be called for. Short irrigation runs have the potential to deposit more salt in the root zone, with possible adverse impacts on plant health and growth. Clay soil is more susceptible to this phenomenon than better-draining soils. Heavier watering done less frequently leaches the accumulating salts out of the root zone.

This is particularly important in regions of the state that don't experience sufficient precipitation during the rainy season. Rainfall can have the same effect as longer watering periods, if the rainstorms are heavy enough. Periods of drought can exacerbate the build-up of salts further but can be answered with a modified irrigation schedule.

NUTRIENTS

Recycled water may also contain higher nutrient levels such as nitrogen, phosphorous and potassium, which are essential components for plant growth. Some treatment processes may reduce the levels of these chemicals, although they are not totally removed.

Fertilizer Value

While nutrient levels vary among treatment plants, there are sufficient levels of nitrogen, phosphorous and potassium in the recycled water to provide fertilizer value to the landscaping each and every time irrigation takes place. Based on nutrient levels in the recycled water being supplied, a Site Supervisor can readily calculate the number of pounds of each constituent being delivered. He or she can then determine how much, if any, and what kind of additional fertilizer needs to be applied.

A common mistake is to continue the same fertilizer application schedule that was in place when domestic water was being used for irrigation. The addition of applied fertilizer, on top of the extra nutrients in the recycled water, can cause problems with plant health, groundwater quality problems and avoidable costs to the site in buying and using unnecessary fertilizer.

Ornamental Lakes

Some reuse sites have ornamental lakes as part of the landscaping. Care must be exercised if recycled water is used to supply these lakes. The nutrient value in the recycled water readily promotes the growth of algae, which can impair the aesthetics of these lakes. This is especially a problem in lakes that are less than 10 feet deep, due to sunlight penetration.

Several different strategies have been employed at such lakes, with the greatest level of success in algae control coming from combinations of two or more of the following methods.

- ☞ Pumping the recycled water from the lake into the irrigation system reduces the amount of time the water (and the nutrients it contains) spends in the lake, consequently reducing algae production.
- ☞ Re-circulating the water by means of fountains or waterfalls or installing more extensive aeration systems.
- ☞ Preventing the introduction of organic material (such as grass clippings) from entering the lake.

- ☞ Stocking the lake with algae eating fish, such as Tilapia (?). However, some fish, like koi, react unfavorably to the higher ammonia levels that may be in the recycled water.
- ☞ Using a chemical product, such as Aqua-Shade, to prevent sunlight from penetrating the water column.
- ☞ Using a chemical algaecide, such as copper sulfate. (Warning: This product is also toxic to other organisms, so the lake water could not be used for landscape irrigation.)
- ☞ Because refilling ornamental lakes may not be a significant consumptive use of the recycled water, in some cases it may be preferable to fill the lakes with potable water or even non-potable well water.

Increased Mowing

Reports from many turf sites using recycled water have reported the need to mow their grass more often. This is the direct result of the additional nutrients in the recycled water being available for uptake by the grass.

D. Wastewater

- 1. Wastewater Ordinance – Los Angeles County Sanitation District**

2010 ANNUAL REPORT

INDUSTRIAL WASTE PRETREATMENT PROGRAM

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

STEPHEN R. MAGUIN
CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED
February 25, 2011

EXHIBIT A

WASTEWATER ORDINANCE

WASTEWATER ORDINANCE

April 1, 1972

As Amended

July 1, 1998

**COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY**

SANITATION DISTRICTS OF LOS ANGELES COUNTY



STEPHEN R. MAGUIN
Chief Engineer and General Manager

WASTEWATER ORDINANCE

In 1972, the Sanitation Districts' Board of Directors first adopted the *Wastewater Ordinance*. The purpose of the Ordinance is to establish controls on users of the Districts' sewerage system in order to protect the environment and public health, and to provide for the maximum beneficial use of the Districts' facilities.

APRIL 1, 1972

As Amended

July 1, 1998

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

STEPHEN R. MAGUIN
Chief Engineer and General Manager

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To report any emergencies relating to wastewater discharges which occur after normal working hours or on the weekends, please telephone 561/437-6520 or 437-1881.

The Boards of Directors of County Sanitation Districts Nos. 1, 2, 3, 4, 5, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 32, 35 and South Bay Cities Sanitation Districts of Los Angeles County do ordain as follows:

AN ORDINANCE PROVIDING FOR THE ADMINISTRATION OF AN INDUSTRIAL WASTEWATER CONTROL SYSTEM; FOR THE REGULATION OF SEWER CONSTRUCTION AND SEWER USE; FOR THE IMPOSITION OF PERMIT REQUIREMENTS FOR INDUSTRIAL WASTEWATER DISCHARGERS; FOR THE PROHIBITION, REGULATION AND PRETREATMENT OF INDUSTRIAL WASTEATERS; FOR THE IMPOSITION OF FEES AND CHARGES; FOR THE DISTRIBUTION OF REVENUE; FOR THE IMPLEMENTATION OF FEDERAL AND STATE POLLUTION CONTROL REGULATIONS AND FOR THE IMPLEMENTATION OF OTHER METHODS OF CONTROLLING AND REGULATING THE DISCHARGE OF WASTEWATERS

County Sanitation Districts of Los Angeles County

WASTEWATER ORDINANCE
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County Sanitation Districts of Los Angeles County

WASTEWATER ORDINANCE PART I ADMINISTRATION

SECTION - 101 AUTHORIZATION

This Ordinance is enacted pursuant to authority contained in the County Sanitation District Act, California Health and Safety Code, Sections 4700 through 4859 and exercises authority conferred by law including but not limited to Health and Safety Code, Sections 5400 through 5474, and California Government Code, Sections 54725 through 54740.

SECTION - 102 PURPOSE AND SHORT TITLE

The purpose of this Ordinance is to protect the environment and public health; to provide for the maximum possible beneficial public use of the Districts' sewerage facilities through adequate regulation of sewer construction, sewer use and industrial wastewater discharges; to provide for equitable distribution of the Districts' costs; and to provide procedures for complying with requirements placed upon the Districts by other regulatory agencies. This Ordinance shall be known as the *Wastewater Ordinance* and may be cited as such.

SECTION - 103 SCOPE

This Ordinance shall be interpreted in accordance with the definitions set forth in Appendix A, hereto, which Appendix is hereby incorporated as a part of this Ordinance.

The provisions of this Ordinance shall apply to all direct or indirect discharges, including the discharge of all wastewater, to any part of the sewerage systems of the Districts, or to other sewerage systems tributary to the Districts' sewerage system. The provisions of this Ordinance shall also apply to wastewater originating outside the territorial boundaries of the Districts or outside the boundaries of Los Angeles County if such wastewater eventually enters the Districts' sewerage system. This Ordinance among other things regulates sewer construction and provides for the approval of plans for sewer construction and implements federal and state pollution control regulations. This Ordinance provides for the issuance of permits, including Permits for Industrial Wastewater Discharge, prohibits the discharge of certain wastes and regulates the quantity and quality of other waste discharges. This Ordinance imposes wastewater pretreatment requirements upon waste dischargers and provides for the regulation of the degree of such pretreatment. This Ordinance provides for the filing of Wastewater Treatment Surcharge Statements, imposes fees and charges and provides for the distribution of revenue. Violations of this Ordinance are subject to criminal fines and penalties, civil liabilities and other penalties in accordance with law.

SECTION - 104 LIQUID WASTE DISPOSAL POLICY

The Districts construct, operate and maintain trunk sewers and wastewater treatment and disposal facilities serving residential, industrial, institutional and commercial users throughout a major portion of Los Angeles County. Local wastewater collection systems (lateral sewers) are constructed, operated and maintained by other public agencies, including the County of Los Angeles and various cities. Such systems are typically tributary to and discharge into the Districts' sewerage systems. The following policies apply to all wastewater discharges within the Districts' boundaries and to other discharges that are tributary to the Districts' facilities.

Wastewater originating within the Districts' boundaries will generally be accepted into the Districts' sewerage systems, provided the wastewater will not, directly or indirectly, (1) damage structures; (2) create nuisances such as odors; (3) threaten public health; (4) impose excessive collection, treatment or disposal costs on the Districts; (5) interfere with wastewater treatment or residue disposal processes; (6) violate quality and pretreatment requirements set by the Districts or federal or state agencies; (7) detrimentally affect the environment or (8) cause the Districts to violate any terms or conditions of their facilities' permits or any other waste discharge or air quality requirements.

The highest and best use of the Districts' sewerage systems is the conveyance, treatment and disposal of domestic wastewater. The use of the Districts' sewerage systems for conveyance, treatment and disposal of industrial wastewater is subject to additional regulation by the Districts.

The use of the Districts' sewerage systems for disposal of contaminated or uncontaminated rainwater, groundwater or stormwater will be permitted by prior approval of the Chief Engineer only in those limited situations provided for in Section 305 of this Ordinance. Approval of any such use will be temporary in nature and may be revoked at any time by the Chief Engineer.

The Districts' sewerage systems must meet requirements imposed by the local, state and federal governments. Such regulations require the Districts to report violations of applicable waste discharge regulations which are discovered by the Districts in the course of their monitoring, inspection or other activities. Any fines or penalties imposed by another governmental agency on the Districts for a condition of noncompliance caused by a wastewater discharger shall be considered damages to the Districts and shall subject the person or persons causing the noncompliance to be subject to the provisions of Section 417 of this Ordinance.

The Districts have adopted a policy of wastewater reclamation and reuse in order to provide an alternate source of water supply and to reduce overall costs of wastewater treatment and disposal. The reclamation of wastewater through secondary and tertiary wastewater treatment processes may necessitate the imposition of quality requirements on industrial wastewater dischargers which are more stringent than those imposed by other government agencies.

To comply with local, state and federal requirements and to meet increasingly higher quality standards for treatment plant effluent, air emissions and residue, provisions are made in this Ordinance for the regulation of industrial wastewater discharges. This Ordinance establishes quantity and quality limitations on industrial wastewater discharges which may adversely affect the Districts' sewerage systems or the quality of treatment plant effluent, air emissions and residue. Methods of cost recovery from industrial wastewater dischargers are also established.

Recovery, reuse and waste minimization procedures established by industrial wastewater dischargers to meet the limitations set on their discharges will be preferred by the Districts over those procedures designed solely to meet wastewater discharge limitations.

In order to provide for the optimum use of the Districts' facilities, the Chief Engineer shall establish conditions of discharge which may include the rerouting of certain wastewaters to alternate sewers or treatment plants. The Chief Engineer may also require that certain industrial wastewaters be discharged during specified periods, such as low flow, in the Districts' sewerage systems.

SECTION - 105 SUPERSEDING PREVIOUS REGULATIONS

This *Wastewater Ordinance*, as amended July 1, 1998, shall supersede all previous regulations and policies of the Districts governing items covered in this Ordinance. Specifically, the provisions of this Ordinance shall supersede the Districts' "Policy Governing Use of District Trunk Sewers" dated December 6, 1961, and shall amend the Districts' "An Ordinance Regulating Sewer Construction, Sewer Use and Industrial Wastewater Discharges," dated April 1, 1972 , and as amended July 1, 1975, July 1, 1980, July 1, 1983, and November 1, 1989.

PART II GENERAL PROVISIONS

SECTION - 201 ADMINISTRATION

Except as otherwise provided herein, the Chief Engineer shall administer, implement and enforce the provisions of this Ordinance. Any powers granted to or duties imposed upon the Chief Engineer may be delegated by the Chief Engineer to persons acting in the beneficial interest of or in the employ of the Districts.

SECTION - 202 PENALTY FOR VIOLATION AND CIVIL LIABILITY

Every person violating any provision of this Ordinance, including the failure to pay any fees, charges or surcharges imposed hereby, or any condition or limitation of a permit or plan approval issued pursuant thereto, is guilty of a misdemeanor, and upon conviction is punishable as provided by law. Each day during which any violation continues shall constitute a separate offense. The Chief Engineer is hereby authorized to seek, through the office of the District Attorney of Los Angeles County or other appropriate authority, prosecution of criminal charges against any person violating any provision of this Ordinance. Violations of discharge limitations established under this Ordinance may also be violations of state and federal environmental laws which may be punishable as felonies and which may also carry substantial fines and penalties.

In addition, any person who violates any provision of this Ordinance or any term or condition of any permit issued pursuant to this Ordinance or plan approval which prohibits or limits the discharge of any waste or imposes any pretreatment requirement shall be civilly liable to the Districts in the maximum sum provided by law for each day in which such violation occurs.

District No. 2 is hereby delegated the sole authority to, and by action of its Board of Directors may, elect to have any fees or charges prescribed by this Ordinance collected on the tax roll, and may, as provided by law, impose liens on property to collect any fees and charges which have become delinquent. District No. 2 is further delegated the sole authority to commence civil actions to enforce the provisions of this Ordinance and to recover any sums due hereunder and may further delegate such portions of that authority to the Chief Engineer as the Board of Directors of District No. 2 may deem appropriate. District No. 2 may agree to submit such actions to binding arbitration in those instances in which the Board determines that it is in the best interest of the Districts to do so.

SECTION - 203 VALIDITY

If any provision of this Ordinance or the application thereof to any person or circumstances is held invalid, the remainder of the Ordinance and the application of such provisions to other persons or circumstances shall not be affected thereby.

SECTION - 204 NOTICE

Unless otherwise provided herein, any notice required to be given to the Chief Engineer under this Ordinance shall be in writing and served in person or by first-class, registered or certified mail. If served by mail, the notice shall be sent to the last address known to the Chief Engineer. Where the address is unknown, service may be made upon the owner of record of the property upon which the alleged violation occurred.

Notice shall be deemed to have been given at the time of deposit, postage prepaid, in a facility regularly serviced by the United States Postal Service.

SECTION - 205 TIME LIMITS

Any time limit provided in any written notice or in any provision of this Ordinance may be extended only by the Chief Engineer in writing.

SECTION - 206 INSPECTORS AND MONITORING PERSONNEL

The Chief Engineer shall provide adequate identification for all Districts' inspectors, monitoring personnel, and other authorized personnel and these persons shall, when so requested, identify themselves when entering any property for inspection or sampling purposes, or when inspecting the work of any contractor.

Authorized personnel of the Districts may inspect and monitor any facility or industrial process that is involved directly or indirectly with any discharge to the Districts' sewerage systems. These facilities shall include but not be limited to sewers; wastewater pumping plants; pollution control plants; industrial wastewater generation, conveyance and pretreatment facilities, devices and connection sewers; wastewater monitoring facilities or stations; and all similar or related sewerage facilities. Inspections may be made to determine whether such facilities are maintained and operated properly, to verify that the discharger is in compliance with a cease and desist order, and to determine whether the discharger is otherwise in compliance with the provisions of this Ordinance.

Authorized personnel of the Districts shall be provided immediate access to all of the above facilities or to other facilities directly or indirectly connected to the Districts' sewerage systems any time wastewater is being discharged to the Districts' sewerage system, and any time the discharger's facility is open or operating, and any other reasonable times including, but not limited to, emergency situations. A condition for the issuance of any industrial wastewater discharge permit described in Sections 401 and 402 of this Ordinance and for the continued use of the Districts' sewerage system shall be that the discharger expressly consents to inspection of the discharger's facility and industrial processes at reasonable times by Districts' personnel or representatives. Inspections of other facilities for which no permit has been applied or issued may be made pursuant to the procedures set forth in Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure. However, those procedures need not be followed in the event of an emergency affecting public health and safety, or if the discharger consents.

Access to wastewater monitoring facilities or stations, which are required under Section 414 of this Ordinance, shall be granted immediately upon request during any time the discharger's plant is open, any time wastewater is being discharged to the Districts' sewerage system, and any other reasonable time. Any permanent or temporary obstruction to the safe and easy access to the sewerage facility to be inspected shall promptly be removed by the discharger or property owner at the written or verbal request of the Chief Engineer and shall not be replaced. Classes of dischargers whose industrial wastewaters have been determined by the Chief Engineer to present identifiable hazards to the Districts' sewerage systems, and those individual dischargers whose security procedures or plant configurations restrict or delay access shall provide an approved, secured monitoring facility which is directly accessible to Districts' personnel without having to pass through other secured property of the discharger. The costs of providing facilities with such access shall be borne by the discharger and not by the Districts.

No person shall interfere with, delay, resist or refuse entrance to authorized Districts' personnel attempting to inspect any facility involved directly or indirectly with a discharge of wastewater to the Districts' sewerage system.

SECTION - 207 DELETED

SECTION - 208 RECORDING OF FEES AND CHARGES

The Chief Engineer shall keep an accurate account of all fees and charges received under this Ordinance, containing the names and addresses of the persons on whose account the fees and charges were paid, the date and amount thereof, and the purpose for which charges were paid. Such records shall be retained for at least that amount of time as provided by law.

SECTION - 209 ESTIMATED QUANTITIES AND VALUES

Unless otherwise provided herein, whenever the fees and charges required by this Ordinance are based on estimated values or estimated quantities, the Chief Engineer shall make such determinations in accordance with generally accepted engineering estimating practices.

SECTION - 210 COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

The Chief Engineer shall establish standards for wastewaters discharged into the Districts' sewerage system or systems tributary thereto in accordance with state law and federal regulations, as they are promulgated from time to time. Violations of such standards shall constitute violations of this Ordinance.

SECTION - 211 APPROVAL OF PLANS AND ISSUANCE OF PERMITS

The Chief Engineer shall approve plans for sewerage construction, issue a Permit for Industrial Wastewater Discharge or any other permit under this Ordinance if the proposed sewerage construction, sewer connection, industrial wastewater discharge or other procedure conforms to the requirements of this Ordinance.

All required fees and charges shall be paid before approval of plans or issuance of a permit. Neither the approval of plans nor issuance of a permit, nor the absence thereof, shall relieve the discharger of any duty imposed by this Ordinance.

SECTION - 212 DISTRIBUTION OF REVENUE

Except as otherwise provided herein, all fees and charges payable under the provisions of this Ordinance shall be paid to the County Sanitation Districts of Los Angeles County and any revenue derived pursuant to this Ordinance shall be allocated as follows:

- (A) Any revenue derived from any source within an individual District other than a Joint Outfall District shall be credited to that District.
- (B) Any revenue derived from any source within the Joint Outfall Districts shall be distributed as prescribed in the Joint Outfall Agreement to which all Joint Outfall Districts are signatory. In the absence of such agreement, revenue shall be distributed as described in (A) above.

SECTION - 213 RECONSIDERATION AND APPEAL PROCEDURES

Any permit applicant, permit holder or wastewater discharger adversely affected by any decision, action or determination made by or on behalf of the Districts by the Chief Engineer in interpreting or implementing the provisions of this Ordinance or any permit issued hereunder, may file with the Districts a written request for reconsideration. Such requests shall be acted upon only if received within 45 days from the date of occurrence of the action in dispute. Requests for reconsideration shall be acted upon by the Chief Engineer within 45 days from the date of receipt. If the Chief Engineer fails to act within 45 days, the request shall be deemed to be denied. Persons requesting reconsideration shall promptly furnish all additional information and produce all additional documents requested by the Chief Engineer which are relevant to the subject matter of the request for reconsideration. Failure to promptly furnish all such information and documents shall be grounds for a denial of the request for reconsideration.

If the ruling made by the Chief Engineer is unsatisfactory to the person requesting reconsideration, the person may file an appeal with the Board of Directors of District No. 2. Any such appeal must be made in writing and filed within 45 days after notice of the action taken by the Chief Engineer. If the request is denied without action by the Chief Engineer, the person making the request must file any appeal within 90 days from the date the request for reconsideration was made. All appeals shall be filed with the Secretary of the Board of Directors of District No. 2.

The written appeal shall state all the pertinent aspects of the matter, and shall be accompanied by a fee of Five Hundred Dollars (\$500.00) which shall be refunded if the appeal is sustained. The Board of Directors of District No. 2 may conduct a hearing on the appeal or may designate as a hearing examiner either one or more of its members or a third party who is neither an officer nor an employee of the Districts and who is found by the Board to possess special expertise in the matter at issue. The hearing examiner or examiners shall conduct a hearing on any appeal filed pursuant to this section and shall afford to the discharger the opportunity to appear personally or through counsel, to cross-examine witnesses and present evidence. Notice of the hearing shall be given in accordance with Section 204 at least fifteen days prior to the date of hearing. The hearing examiner or examiners shall submit a written report and recommendations to the Board together with a brief summary of the evidence considered and the conclusions reached with respect to this evidence.

The Board of Directors of District No. 2, after considering the evidence presented at a hearing before the full Board or report submitted to it by the hearing examiner, shall adopt findings supported by the evidence and shall make its decision and issue its order. The Board may adopt, reject or modify the report of the hearing examiner in whole or in part.

No decision, action, or determination of the Chief Engineer shall be stayed by any appeal procedure authorized by this section.

SECTION - 214 PAYMENT OF CHARGES AND DELINQUENT CHARGES

Wastewater treatment surcharges shall be determined in accordance with Section 409 of self-monitoring procedures performed by the industrial discharger pursuant to Section 414 and reported to the Districts as required by Section 411. Except as hereinafter provided, each industrial discharger shall make estimated surcharge payments to the Districts. Payments shall be due and payable on September 30, December 31, March 31, and August 15 of each year.

Such payments shall be delinquent if not paid on said dates and collectively shall be in such amounts as shall equal the total surcharge payable as determined in accordance with procedures established by the Chief Engineer. The payment due August 15 of each year shall be equal the total wastewater treatment surcharge due for the preceding fiscal year less the sum of the prepayments due and made on September 30, December 31, and March 31 of the preceding fiscal year. In the event the sum of the prepayments exceeds the annual wastewater treatment surcharge due, the overpayment shall be refunded upon verification by the Districts. Wastewater treatment surcharges found to be due after audit shall bear interest from August 15 following the end of the fiscal year for which such surcharges accrued.

All other fees and charges imposed under the provisions of this Ordinance are due and payable upon serving a notice of charges. Any notice of charges shall be served by first-class mail or such other procedure as will reasonably assure receipt. Unpaid charges shall become delinquent 45 days after mailing or personally serving the notice of charges.

A basic penalty of one percent of the original unpaid amount shall be added to any fee or charge or wastewater surcharge for each day the charge is delinquent. This basic penalty shall not exceed ten percent. Additional penalties and interest shall accrue on the total of all delinquent fees, charges or wastewater surcharges and the basic penalty, at three percent over the prime interest rate in effect at the beginning of the fiscal year during which the charges were initially due, not to exceed the maximum allowed by law.

SECTION - 215 FAILURE TO FILE FORMS

Any person failing to file any form, statement, or permit application, or to submit plans or other documents or to provide information required by this Ordinance or by the Chief Engineer pursuant to authority conferred by this Ordinance shall be in violation of this Ordinance and shall be subject to the penalties and liabilities provided for in Section 202.

SECTION - 216 DAMAGE TO DISTRICTS' FACILITIES OR EQUIPMENT

Any unauthorized entering, breaking, damaging, destroying, uncovering, defacing or tampering with any temporary or permanent structure, equipment or appurtenance which is owned by the Districts or a part of the Districts' sewerage systems shall be a violation of this Ordinance.

SECTION - 217 EFFECTIVE DATE OF ORDINANCE

The effective date of this Ordinance is April 1, 1972; the effective date of the first amended Ordinance is July 1, 1975; the effective date of the second amended Ordinance is July 1, 1980; the effective date of the third amended Ordinance is July 1, 1983; the effective date of the fourth amended Ordinance is November 1, 1989; the effective date of the fifth amended Ordinance is July 1, 1998.

SECTION - 218 EFFECTIVE DATE OF WASTEWATER TREATMENT SURCHARGE

Charges made under Section 409 shall begin to accrue on July 1, 1972 and shall become payable thereafter as provided in this Ordinance.

PART III SEWERAGE CONSTRUCTION AND SEWER USE

SECTION - 301 APPROVAL OF PLANS FOR SEWERAGE CONSTRUCTION

No person, other than employees of the Districts, persons contracting to do work for the Districts, or maintenance workers of the local sewerage agency, shall construct or cause to be constructed, or alter or cause to be altered, any public sewer, lateral sewer, house connection or industrial connection sewer over six (6) inches in diameter, wastewater pumping plant, wastewater treatment plant, or other sewerage facility within the Districts where existing or proposed wastewater flows will discharge directly or indirectly to facilities of the Districts without first obtaining approval of sewerage construction plans from the Chief Engineer.

Persons wishing to make a sewer connection to the Districts' system may be required to pay a connection fee for sewerage system capacity. The *Connection Fee Ordinance* for the Sanitation District in which the sewer connection is proposed should be reviewed for specific requirements.

The applicant shall submit to the Chief Engineer for approval, construction plans and such specifications and other details as required to describe fully a proposed sewerage facility. The plans shall have been prepared under the supervision of and shall be signed by a civil, chemical or structural engineer registered in the State of California, or a registered engineer of other suitable discipline as determined by the Chief Engineer.

Approval of the plans by the city or by the county department that has jurisdiction over the local sewerage system in the area in which the sewerage facility is to be located, shall be obtained before approval of plans by the Chief Engineer. Two (2) complete copies of the sewerage facility plans shall be furnished to the Chief Engineer for review and approval prior to any facility construction. Any revisions to approved plans shall be submitted for approval as described above.

Plans for sewerage construction for any facility which will convey industrial wastewater will not be approved by the Chief Engineer unless the discharger has first obtained a Districts' Permit for Industrial Wastewater Discharge or the discharger has received written permission from the Chief Engineer after agreeing not to discharge industrial wastewaters until a Districts' Permit for Industrial Wastewater Discharge is obtained.

Plans for sewerage construction shall meet all design requirements of the local sewerage agency and shall also meet all design requirements as established from time to time by the Chief Engineer. Inspection of all sewerage construction under this Section shall be made by personnel of the Districts in the manner described in Section 303. An approval of plans for sewerage construction shall expire one (1) year after date of approval unless construction has been initiated by that time.

SECTION - 302 PERMIT FOR SEWER SIX INCHES OR SMALLER IN DIAMETER CONNECTING DIRECTLY TO A TRUNK SEWER OF THE DISTRICTS

Any person desiring to connect a sewer six (6) inches or smaller in diameter directly to a trunk sewer of the Districts shall make written application to the Chief Engineer on a Districts' Trunk Sewer Connection Permit application form. The applicant shall complete the form and furnish such additional information as required by the Chief Engineer to substantiate that the proposed work or use will comply with the provisions of this Ordinance.

A Trunk Sewer Connection Permit will not be issued unless the applicant has first obtained approval from the local sewerage agency in the area in which the property is located. A Trunk Sewer Connection Permit will not be issued for any sewer which will convey industrial wastewater unless the discharger has first obtained a Districts' Permit for Industrial Wastewater Discharge.

Direct connection of a sewer six (6) inches or smaller in diameter to a Districts' trunk sewer will be permitted only if the Chief Engineer determines that a suitable local sewer is not available, that adequate trunk sewer capacity exists, that the connection will function properly and that the connection will not adversely affect existing or anticipated facilities or operations of the Districts.

Sewers six (6) inches or smaller in diameter to be connected directly to a Districts' trunk sewer shall be constructed in a manner and at a location specified by the Districts. Inspection of the connections to a trunk sewer shall be made by personnel of the Districts in the manner described in Section 303.

No sewer exceeding six (6) inches in diameter shall be connected directly to a Districts' trunk sewer without the prior approval of plans for sewerage construction, in accordance with Section 301 of this Ordinance.

A Districts' Trunk Sewer Connection Permit shall expire 120 days after issuance unless construction of the connection has been initiated by that time. A permit will not be required from the Districts for connection of a sewer six (6) inches or smaller in diameter which does not connect directly to a trunk sewer, providing the sewer will not carry industrial wastewaters.

SECTION - 303 INSPECTION OF CONSTRUCTION

All sewers to be connected directly to a Districts' trunk sewer will be inspected by personnel of the Districts during construction. The Districts shall be notified at least 48 hours prior to excavating to expose a Districts' sewer or commencing construction of a manhole on a Districts' sewer. In making a connection to a Districts' trunk sewer, no physical alteration of the Districts' facilities shall commence until a Districts' inspector is present.

Sewerage facilities which will not be directly connected to a Districts' sewer will not be inspected routinely by the Districts during construction. Upon completion of construction and prior to removal of the downstream bulkhead and upon receiving 48 hours notice, the Districts will inspect the work to determine if it has been constructed in a satisfactory manner and to determine if all facilities are cleaned of construction debris that could be flushed into the Districts' sewers.

No wastewater shall be discharged into any sewerage facility tributary to a Districts' facility prior to obtaining inspection and approval of sewerage construction by the Districts.

Following satisfactory completion of construction, the Districts will, if requested, issue a construction inspection completion statement.

SECTION - 304 PLAN APPROVALS AND PERMITS NOT TRANSFERABLE

Approval of plans for sewerage construction and Trunk Sewer Connection Permits are not transferable from one person to another person or from one location to another location.

SECTION - 305 PROHIBITED RAINWATER, GROUNDWATER AND OTHER WATER DISCHARGES

No person shall discharge or cause to be discharged any contaminated or uncontaminated rainwater, water used in fighting fires, stormwater, groundwater, artesian well water, street drainage, yard drainage, water from yard fountains, ponds or lawn sprays into any sewerage facility which directly or indirectly discharges to facilities owned by the Districts, except where prior approval for such discharge of water is given by the Chief Engineer. Approved discharges shall be considered industrial wastewater discharges under this Ordinance. Any such approval may be revoked at any time by the Chief Engineer.

SECTION - 306 PROHIBITED INDUSTRIAL WASTEWATER DISCHARGE

No industrial wastewaters shall be discharged to a Districts' trunk sewer or to a sewer discharging directly or indirectly to a Districts' trunk sewer until a Permit for Industrial Wastewater Discharge has been approved by the Districts.

SECTION - 307 MANHOLE RECONSTRUCTION NOTIFICATION

The work of adjusting manholes on Districts' sewers to new elevations will be performed by personnel of the Districts in cooperation with the paving contractor and in accordance with established procedures of the Districts. The person proposing or performing work necessitating the adjustment of manholes on Districts' sewers to a new elevation shall be responsible for notifying the Districts at least 48 hours in advance of the work.

SECTION - 308 IMPROPER USE OF CONNECTED SEWERS

The Districts may inspect any lateral or collecting sewers that discharge wastewater directly or indirectly to the Districts' trunk sewers. If the Chief Engineer determines that the improper use, maintenance, or construction of a lateral or collecting sewer causes or contributes to the discharge of septic wastewater, excessive groundwater, debris or any other objectionable substance to the Districts' sewers, the Chief Engineer may give notice of the unsatisfactory condition to any discharger contributing to such condition and to the local sewerage agency responsible for the maintenance of such sewer, and shall direct that condition be corrected. In the event of a failure to comply with the Chief Engineer's directive, the Districts may disconnect such lateral or collecting sewer from the Districts' sewerage system.

SECTION - 309 CHARGE FOR EXCESSIVE SEWER MAINTENANCE

No person shall discharge or cause to be discharged to a Districts' trunk sewer, either directly or indirectly, any waste that obstructs, interferes with, or otherwise requires excessive maintenance of any Districts' sewer or sewerage facility; including any waste that creates a stoppage or breakage; any toxic, hazardous or odorous condition; or any damage or deterioration of any Districts' sewer or sewerage facility. Any excessive sewer or sewerage maintenance expenses or reconstruction costs including administrative costs attributable thereto shall be charged to the discharger causing or contributing to such conditions. Any refusal to pay such charges shall constitute a violation of this Ordinance.

PART IV INDUSTRIAL WASTEWATERS

SECTION - 401 PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE

Except as hereafter provided, no person shall discharge or cause to be discharged any industrial wastewaters directly or indirectly to the sewerage facilities owned by the Districts without first obtaining a Districts' Permit for Industrial Wastewater Discharge (Permit). A Districts' Permit shall be obtained prior to commencement of any construction of new or modified facilities which will discharge industrial wastewater to the sewer. A separate Permit shall be required for each industrial wastewater connection to a public sewer discharging directly or indirectly to the Districts' sewerage system. The use of a sewer connection which is the subject of a Districts' Permit by anyone other than the person named in the Permit is prohibited. A Permit or Permit revision shall also be obtained by dischargers who use transportable treatment systems for pretreatment of industrial wastewater. Any person who operates a transportable treatment system must receive written authorization from the Chief Engineer prior to commencement of operations at any industrial facility. Any person operating a transportable treatment system shall comply with all requirements established by the Chief Engineer for such systems. A Permit shall also be obtained by all persons generating industrial wastewater, other than hauled domestic wastewater, which enters the Districts' sewerage system by means of liquid waste haulers.

The Chief Engineer may exempt certain classes of dischargers of industrial wastewaters from the requirement to obtain a Permit if the quantity and quality of the wastewater is determined to be unlikely to create significant effects on the Districts' sewerage system or produce violations of state law or federal regulations.

The Permit may require pretreatment of industrial wastewaters before discharge, restriction of peak flow discharges, discharge of certain wastewaters only to specified sewers of the Districts, relocation of point of discharge, consolidation of wastewater discharge connections, prohibition of discharge of certain wastewater components or characteristics, batch treatment and discharge, restriction of discharge to certain hours of the day, and such other conditions as may be required to effectuate the purposes of this Ordinance. The Permit may also require payment of additional charges to defray increased costs of the Districts created by the wastewater discharge and payment of equivalent connection fees, equivalent annexation fees or other equivalent charges for dischargers not located within the Districts (or who, historically, have not been subject to the Districts' normal revenue charges).

Permits for facilities that receive for treatment, recycling or reclamation one or more wastes generated off-site, may additionally require monitoring of influent wastestreams and may restrict the types and quantities of wastes accepted.

The Districts' Permit is not transferable to a new business location or to a new business. Each discharger shall immediately notify the Districts in writing of any change in the name or legal capacity of the discharger. The Permit shall be voidable by the Chief Engineer upon non-use, cessation of operations, transfer of business ownership, or the issuance of a new Permit for the same sewer connection.

No person shall discharge industrial wastewaters in excess of the quantity or quality limits stated in the Permit. The violation of any Permit condition or requirement shall constitute a violation of this Ordinance and shall be punishable as provided by law. Any person who, as defined by the Chief Engineer, significantly increases or decreases the flow rate or significantly

alters the quality of wastewater discharge shall immediately apply for and obtain a Permit revision. Any discharger who modifies an industrial plant, operating mode, process, or wastewater treatment facility in a manner which, as defined by the Chief Engineer, would significantly increase or decrease the flow rate or significantly alter the quality of the wastewater discharge described in a Permit or Wastewater Treatment Surcharge Statement shall first apply for and obtain a Permit revision. This Permit revision shall be obtained prior to the commencement of any construction of new plant facilities or operation of modified facilities by the wastewater discharger.

As a condition of the Districts' issuance of a Permit, each discharger shall agree that upon receipt of a Notice of Suspension under Section 404 of this Ordinance or upon receipt of a Notice of Revocation under Section 405 of this Ordinance, such discharger shall immediately cease and desist the direct or indirect discharge of all industrial wastewater to the Districts' sewerage system. As a further condition of the issuance of a Permit, it shall be agreed that, upon application by District No. 2, any court of competent jurisdiction may enter a temporary restraining order and preliminary and permanent injunction restraining any discharges in violation of this Ordinance.

SECTION - 402 PROCEDURE FOR OBTAINING A DISTRICTS' PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE

Applicants for a Permit for Industrial Wastewater Discharge shall complete a Districts' application form available at the Districts' offices or at the office of the local sewerage agency having jurisdiction in the area in which the discharge is to be made. Following approval, the local sewerage agency shall forward the application form and appurtenant plans and data to the Districts for review and approval. The Districts may require additional information from the discharger beyond that required on the application form. Detailed instructions for obtaining a Permit are contained in the Districts' booklet, "Information and Instructions for Obtaining an Industrial Wastewater Discharge Permit" which can be obtained at the Districts' offices or at the office of the local sewerage agency. Applicants for permits shall comply with all such instructions.

Upon receipt of all required information, the Districts will determine whether the discharger is obligated to pay a connection fee. This fee shall be paid to the Districts before the Permit is issued. Dischargers shall be assigned a single surcharge account and a single sewer capacity baseline for all contiguous property even though individual permits may be issued for separate connections from such property. After all information and fees are received, the application shall be processed and, upon approval, be signed by representatives of both the local sewerage agency and the Districts, and one copy returned to the applicant. When properly signed, the application form together with any documents attached thereto shall constitute a valid Permit.

The application shall be approved if the applicant has complied with all applicable requirements of this Ordinance and furnished to the Districts all requested information and if the Chief Engineer determines that there is adequate capacity in the Districts' facilities to convey, treat, and dispose of the wastewaters. Dischargers shall comply with all terms, conditions, limitations, requirements, and instructions contained in their Permit. Violations of Permit terms, conditions, limitations, requirements, and instructions including any federal pretreatment standards or any effluent limits adopted by the Districts or required by state law, shall be enforceable as violations of this Ordinance, and shall be punishable as provided by law.

In the event that the Chief Engineer determines that any person is discharging industrial wastewater directly or indirectly to the Districts' sewerage system without a valid Permit, the Chief Engineer may issue to such person a Temporary Permit for Industrial Wastewater Discharge (Temporary Permit) containing such conditions, limitations, restrictions, and other provisions or requirements which the Chief Engineer determines are necessary or advisable to protect the Districts' system and to assure compliance with all federal, state and Districts' discharge requirements. This Temporary Permit shall be enforceable until such time as a Permit is issued. The discharger shall immediately comply with all of the provisions and requirements of such Temporary Permit, and shall apply for a Permit within thirty (30) days from the issuance of the Temporary Permit. A Temporary Permit is revocable by the Chief Engineer at any time. Any person whose Temporary Permit is revoked shall immediately cease and desist all discharge of any industrial wastewaters.

SECTION - 403 CHANGE OF RESTRICTIONS IN PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE

The Chief Engineer may upon reasonable notice to the discharger change or modify the restrictions or conditions of a Permit from time to time to effectuate the purposes of this Ordinance. Alternatively, the Chief Engineer may require the discharger to apply for a new or revised Permit. The Chief Engineer shall allow an industrial wastewater discharger a reasonable period of time to comply with any changes required in the Permit.

SECTION - 404 SUSPENSION OF PERMITS ISSUED UNDER THIS ORDINANCE

The Chief Engineer may suspend any permit issued under the authority of this Ordinance for a period not to exceed forty-five (45) days when such suspension is necessary in order to stop a discharge which presents an imminent hazard to the public health, safety or welfare, to the environment, to the local sewerage agency's system, or to the Districts' sewerage system.

Any discharger notified of a permit suspension shall immediately cease and desist the discharge of all industrial wastewater to the sewerage system. In the event of a failure of the discharger to comply voluntarily with the suspension order, the Chief Engineer shall take such steps as are reasonably necessary to insure compliance which may include blocking or severing the discharger's connection to the Districts' system.

Any discharger whose permit is suspended may file with the Chief Engineer a request for a suspension hearing. Such a request shall not stay the suspension. In the event of such request, the Chief Engineer shall, within fourteen (14) days of the receipt of such request, hold a hearing on the suspension and shall either confirm or terminate the suspension.

Reasonable notice of the suspension hearing shall be given to the discharger in the manner provided for in Section 204. At this hearing the discharger whose permit is suspended may appear personally or through counsel, cross-examine witnesses and present evidence. A decision on the suspension shall be made by the Chief Engineer within seventy-two (72) hours after the close of the hearing or the order of suspension shall be stayed until a decision is made either approving or terminating the suspension action. The decision of the Chief Engineer shall be made in writing and shall contain a brief summary of the evidence considered together with a written statement of findings of fact and conclusions of law.

The Chief Engineer shall reinstate the suspended permit upon proof of satisfactory compliance with all discharge requirements of the Districts including all additional permit requirements deemed necessary by the Chief Engineer.

The Districts' legal counsel may, upon recommendation of the Chief Engineer, commence and prosecute such legal action as may be appropriate to enforce the provisions of this Section.

SECTION - 405 REVOCATION OF PERMITS ISSUED UNDER THIS ORDINANCE

The Board of Directors of District No. 2 may revoke any permit issued under the authority of the Ordinance upon a finding that the discharger has violated any provision of this Ordinance, or any other ordinance adapted by the Districts. No Revocation of a Permit, other than a Temporary Permit, shall be ordered until a revocation hearing on the question has been held by the Chief Engineer. At this revocation hearing, the discharger may appear personally or through counsel, cross-examine witnesses, and present evidence. Notice of the revocation hearing shall be given to the discharger in accordance with Section 204 at least fifteen (15) days prior to the date of the hearing. The Chief Engineer may, without prior Board authorization, initiate a permit revocation hearing and action.

If at the conclusion of the revocation hearing the Chief Engineer recommends revocation of the permit, he shall submit a written report with his recommendation to the Board of Directors of District No. 2 together with a brief summary of the information considered and the conclusions reached. The Board, after considering the information presented at the revocation hearing and the Chief Engineer's report, and any report submitted by the discharger, shall adopt findings supported by the information and may adopt, reject or modify the report in whole or in part and shall make its decision and issue its order.

The decision of the Board of Directors of District No. 2 on whether or not to revoke a permit shall be made in writing and served promptly upon the discharger in the manner provided in Section 204. The order of the Board may be effective immediately or at a later date as may be specified in such order.

Any discharger whose permit has been revoked shall immediately comply with any order of revocation issued by the Board of Directors of District No. 2 and shall cease and desist all discharges. The Chief Engineer may permanently block or sever any connection to the Districts' sewerage system of any discharger whose permit has been revoked, if such action is necessary to insure compliance with the order of revocation.

Before any further discharge of wastewater may be made by the discharger whose permit has been revoked, the discharger must apply for a new Districts' permit, pay all charges that would be required upon initial application together with all delinquent fees, charges and penalties and such other sums as the discharger may owe to the Districts, excluding any connection fees previously paid. Costs incurred by the Districts, including administrative costs, in revoking the permit and disconnecting the discharger from the Districts' sewerage system shall be paid by the discharger before issuance of a new permit.

SECTION - 406 PROHIBITED AND RESTRICTED WASTE DISCHARGES

No person shall discharge or cause to be discharged to the Districts' sewerage systems, or to any public sewer that directly or indirectly connects to the Districts' sewerage systems, any wastes which may have an adverse or harmful effect on sewers, maintenance personnel,

wastewater treatment plant personnel or equipment, treatment plant processes or the quality of treatment plant effluent or residue, public or private property, or wastes which may otherwise endanger the public, the environment, or create a public nuisance. No person shall discharge or cause to be discharged to the Districts' sewerage systems, or to any public sewer that directly or indirectly connects to the Districts' sewerage systems, any wastes which adversely affect air quality, adversely affect water reclamation processes or the quality of reclaimed water, cause or contribute to a violation of any requirement of any Districts' facilities permit, any National Pollutant Discharge Elimination System Permit or waste discharge requirements, or place the Districts in noncompliance with any of the statutory authorities listed in Title 40, Code of Federal Regulations, Part 403.3(i), or place the Districts in noncompliance with any local, state or federal law including any air quality standard or regulation such as the New Source Performance Standards (set forth in Part 60, Chapter I, Title 40, Code of Federal Regulations), the National Emissions Standards for Hazardous Air Pollutants (set forth in Part 61, Chapter I, Title 40, Code of Federal Regulations), or any standard or regulation promulgated by the California Air Resources Board or the South Coast Air Quality Management District.

Prohibited or restricted wastes described in this section shall not be discharged, processed or stored in such a manner that such wastes could have access to the public sewer. Any prohibited or restricted wastes found in any approved monitoring facility as referred to in Section 414 shall be conclusively presumed to have been discharged to the public sewer and the discharger shall be subject to the enforcement provisions of this Ordinance.

Dischargers shall immediately notify the Districts of the discharge of any prohibited waste, or of the discharge of excessive quantities or concentrations, as defined by the Chief Engineer, of any restricted waste. Dischargers shall also notify the Districts of any circumstances affecting their plant processes or facilities which may potentially result in the discharge of a prohibited waste or of excessive quantities or concentrations, as defined by the Chief Engineer, of any restricted waste, including but not limited to any malfunction, upset or improper operation of the discharger's plant processes, pretreatment systems, or spill containment facilities, or any diversion or bypass of wastewater. Failure to immediately notify the Districts of any such condition shall be a separate violation of this Ordinance.

No person shall discharge or cause to be discharged to a public sewer, which directly or indirectly connects to the Districts' sewerage systems, the following wastes or wastes in any quantities or concentrations in excess of the following restrictions:

- (A) Any gasoline, benzene, naphtha, solvent, fuel oil or any liquid, solid, or gas that would cause or tend to cause flammable or explosive conditions to result in the sewerage system or that would exceed the lower explosive limit established by the Chief Engineer at the approved industrial monitoring location or that would create such conditions in the sewerage system.
- (B) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of toxic or poisonous solids, liquids or gases in such quantities that, alone or in combination with other waste substances, may create a hazard for humans, animals or the environment, interfere detrimentally with wastewater treatment processes, cause a public nuisance, or cause any hazardous condition to occur in the sewerage system.
- (C) Any waste having a pH lower than 6.0 or having any corrosive or detrimental characteristic that may cause injury to wastewater treatment or maintenance personnel

or may cause damage to structures, equipment or other physical facilities of the sewerage system.

- (D) Any solids or viscous substances of such size or in such quantity, condition or nature that they may cause obstruction to flow in the sewer or be detrimental to proper wastewater treatment plant operations. These objectionable substances include, but are not limited to, asphalt, dead animals, offal, ashes, sand, mud, straw, industrial process shavings, metal, glass, diatomaceous earth, rags, feathers, tar, plastics, wood, whole blood, paunch manure, bones, hair and fleshings, entrails, paper dishes, paper cups, milk containers or other similar paper products whole or ground or materials which tend to solidify in the sewer and obstruct wastewater flow.
- (E) Any rainwater, stormwater, groundwater, artesian well water, street drainage, subsurface drainage, roof drainage, yard drainage, water from yard fountains, ponds or lawn sprays or any other contaminated or uncontaminated water except to the extent provided by Section 305.
- (F) Any water added for the purpose of diluting wastes which would otherwise exceed applicable maximum concentration limitations.
- (G) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of petroleum or mineral-based cutting oils, commonly called soluble oil and which form persistent water emulsions.
- (H) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of nonbiodegradable oil, petroleum oil or refined petroleum products.
- (I) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of dispersed biodegradable oils, fats and greases, such as lard, tallow or vegetable oil.
- (J) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of cyanide.
- (K) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of undissolved or dissolved solids.
- (L) Any wastes containing excessive quantities or concentrations, as defined by the Chief Engineer, of BOD, COD or other oxygen-demanding substances.
- (M) Any wastes containing excessive quantities or concentrations, as defined by the Chief Engineer, of mercaptans, sulfides, phenols, or any strongly odorous material or material tending to create odors.
- (N) Any wastes containing dissolved sulfides above a concentration of 0.1 milligram/liter or wastes which contribute to excessive sulfide production, as defined by the Chief Engineer.
- (O) Any wastes containing excessive quantities or concentrations, as defined by the Chief Engineer, of dissolved silica, dissolved aluminum, or other substances including high

pH material which cause incrustations, scale or precipitates on sewer walls or other similar adverse effects on the sewerage system.

- (P) Any substance promoting or causing the promotion of toxic gases.
- (Q) Any waste having an excessively high temperature as defined by the Chief Engineer, any waste having a temperature of 140° F or higher, or which may cause the wastewater influent to a Districts' treatment plant to exceed 104° F.
- (R) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of thiosulfate or any other waste constituent which requires chemical applications above levels used in the normal operation of the Districts' sewerage systems.
- (S) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of toxic organic, chlorinated hydrocarbon or organic phosphorus-type compounds.
- (T) Any excessive quantities, as defined by the Chief Engineer, of deionized water, steam condensate or distilled water.
- (U) Any waste containing substances that may precipitate, solidify, gel, polymerize or become viscous under conditions normally found in the sewerage system.
- (V) Any waste producing or contributing to discoloration of wastewater or treatment plant effluent, as determined by the Chief Engineer.
- (W) Any garbage or waste, other than domestic wastewater, that is not ground sufficiently to pass through a 3/8-inch screen.
- (X) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of iron, manganese, boron, chromium, phenols, plastic resins, copper, nickel, zinc, lead, mercury, cadmium, selenium, silver, arsenic or any other materials toxic to humans, animals, the environment or to biological or other wastewater treatment processes.
- (Y) Any blowdown or bleed water from cooling towers or other evaporative coolers exceeding one-third of the makeup water.
- (Z) Any single pass cooling or heating water.
- (AA) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of radioactive material wastes.
- (BB) Any waste containing recognizable portions of the human anatomy.
- (CC) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of detergents, surface active agents, or other substances, which may cause foaming in the sewerage system.

- (DD) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of chlorides, fluorides, sulfates, borates or any other materials that can pass through treatment facilities and degrade water quality or limit reuse of the wastewater.
- (EE) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of ammonia.
- (FF) Any waste containing excessive quantities or concentrations, as defined by the Chief Engineer, of benzene or other volatile organic compounds or any other waste constituent that alone or in combination with other materials adversely affects air quality.

The Chief Engineer shall, from time to time, establish quantitative or other limitations applicable to industrial wastewater discharges when in his judgment it is necessary to protect the Districts' sewerage system or to be in compliance with state or local law or federal regulations. Such limitations shall apply at the industrial wastewater monitoring facility or station prior to mixing with domestic wastewaters. Wastewater discharges in excess of the limits established by the Chief Engineer or any state law or applicable federal pretreatment standard shall constitute excessive concentrations or quantities prohibited by this Section 406. The Chief Engineer shall promulgate and maintain a list of limitations established for restricted wastes which are generally applicable to all dischargers and shall make such list available upon request.

The Chief Engineer shall establish quantitative limitations for dischargers which, because of their location, quantity or quality of discharge, can degrade the quality of wastewater treatment plant effluent or residue or air quality to a level that prevents or inhibits Districts' efforts to reuse or dispose of the water or residue or causes any unusual operation or maintenance problems in the sewerage system. The Chief Engineer, in determining the unacceptability of specific wastes, shall consider the nature of the waste and the adequacy and nature of the collection, treatment and disposal system available to accept the waste.

SECTION - 407 MEDICAL AND INFECTIOUS WASTES

The Chief Engineer may prohibit the discharge of infectious wastes and may require that any such wastes be rendered noninfectious prior to discharge if deemed to pose a threat to public health and safety. No person shall discharge solid wastes from hospitals, clinics, offices of medical doctors, convalescent homes, medical laboratories or other medical facilities to the Districts' sewerage system including, but not limited to, hypodermic needles, syringes, instruments, utensils or other paper and plastic items of a disposable nature, or recognizable portions of the human anatomy or laboratory animals, except where prior written approval for such discharges is given by the Chief Engineer. Approved discharges shall be considered industrial wastewater discharges under this Ordinance. Any such approval may be revoked at any time by the Chief Engineer.

SECTION - 408 AVAILABILITY OF DISTRICTS' FACILITIES

If sewerage capacity is not available, the Districts may require any industrial wastewater discharger to restrict a discharge until sufficient capacity can be made available. When requested, the Districts will advise persons desiring to locate new facilities of those areas where industrial wastewater of their proposed quantity and quality can be accommodated by available sewerage facilities. The Districts may refuse service to persons locating facilities in areas where

their proposed quantity or quality of industrial wastewater would adversely affect the available sewerage facility.

SECTION - 409 WASTEWATER TREATMENT SURCHARGE FOR INDUSTRIAL DISCHARGERS

Each industrial discharger not exempted under Section 411 shall pay to the Districts an annual wastewater treatment surcharge in accordance with Section 214. The wastewater treatment surcharge shall be determined in accordance with each such discharger's contribution of flow, chemical oxygen demand, suspended solids, and peak flow. The wastewater treatment surcharge shall be based on the appropriate Districts' sewerage system's maintenance, operation and capital expenditures for providing wastewater collection, treatment and disposal services as described in Section 410.

The annual wastewater treatment surcharge shall be computed by the following formula:

$$\text{Surcharge} = a(V) + b(\text{COD}) + c(\text{SS}) + d(M)(P)$$

Where:

Surcharge = Net annual wastewater treatment surcharge in dollars.

V = Total annual volume of wastewater flow, in millions of gallons.

COD = Total annual wastewater discharge of chemical oxygen demand, in thousands of pounds.

SS = Total annual wastewater discharge of suspended solids, in thousands of pounds.

P = Peak wastewater discharge rate over a thirty (30) minute period occurring between the hours of 8:00 a.m. and 10:00 p.m. in gallons per minute. Values of "P" which are equal to or less than ten (10) gallons per minute shall be considered equal to zero.

a,b,c,d = Unit charge rates adopted by each individual District based upon the projected annual costs for wastewater collection, treatment and disposal, in dollars per unit, as described in Section 410.

M = Multiplying factor accounting for increased Districts' costs due to high ratios of industrial discharge peak-to-average flow rates (P/A), where "P" is defined above, and "A" is the average wastewater discharge rate, determined by dividing "V" by the total annual hours of significant wastewater discharge for the industrial discharger, converted to gallons per minute. Factor M is obtained from [Figure 1](#).

The quantities for yearly total flows, COD, suspended solids, and peak flow rates used in the above formula are to be determined by wastewater flow measurements and periodic sampling and analysis of the wastewater in accordance with such procedures as may be specified by the Chief Engineer. Extensive wastewater sampling, analysis, and flow measurement may be

required by the Chief Engineer for larger wastewater dischargers or for those who discharge pollutants in significantly large or unusual amounts.

The Chief Engineer shall set the minimum requirements for sampling, analysis, and flow measurement by the discharger necessary to establish quantities to be used in the above formula.

The Chief Engineer shall establish a wastewater treatment charge per million gallons applicable to industrial dischargers whose yearly flow does not exceed six (6) million gallons. This charge shall be based upon average costs of providing wastewater services to industrial dischargers falling within this classification and may be used upon approval of the Chief Engineer in lieu of the preceding formula. Approval of the Chief Engineer shall be withheld only with respect to discharges of unusually high strength wastes in terms of COD and suspended solids. Wastewater treatment surcharges for such dischargers shall be due and payable on the dates set forth in Section 214 or less frequently upon the determination of the Chief Engineer. The Chief Engineer may from time to time establish a different quantitative limitation than that set forth above so long as the same does not exceed a yearly flow of twelve and one-half million gallons. The charge described in this paragraph shall not apply to industrial dischargers subject to user charges established under Section 422.

The Chief Engineer shall establish a charge per employee for domestic wastewater discharges which shall be paid by all industrial dischargers whose domestic wastewater is not included in the general wastewater treatment surcharge payment. Such charge shall be based upon the average quantity and quality of domestic wastewater per employee and the charge rates established for the wastewater treatment surcharge formula.

If the industrial discharger elects or is required by the Districts to discharge the peak rates of industrial wastewater flow during the nighttime hours between 10:00 p.m. and 8:00 a.m., the flow discharge shall be made approximately uniform during these hours. Certain industrial dischargers may be prohibited from discharging peak flow during the nighttime hours if these flows would adversely affect Districts' operations.

SECTION - 410 ESTABLISHMENT OF UNIT CHARGE RATES FOR WASTEWATER TREATMENT SURCHARGE

Unit charge rates a, b, c, and d in the wastewater treatment surcharge formula, as described in Section 409, shall be established for each sewerage system by the procedure described herein and shall be adopted by the individual Districts which utilize each system.

For each sewerage system, appropriate unit charge rate parameters for flow, chemical oxygen demand, and suspended solids--respectively designated a (in dollars per million gallons), b (in dollars per 1000 pounds of COD) and c (in dollars per 1000 pounds of suspended solids)--shall be determined by the following method:

- (A) The total annual operation and maintenance costs for each sewerage system, excluding the annual costs for the administration and operation of the industrial waste program, shall be estimated for the accrual year or accrual years in the event of a multiple year rate adoption and distributed among the three wastewater charge parameters of flow, chemical oxygen demand, and suspended solids. This distribution shall be in accordance with the Chief Engineer's determination of the average

distribution of such sewerage system's costs predominantly related to each parameter for the most recent year for which complete data are available.

- (B) The total annual net capital costs for each sewerage system shall be estimated for the accrual year or accrual years in the event of a multiple year rate adoption and distributed among the three wastewater charge parameters of flow, chemical oxygen demand, and suspended solids in accordance with the Chief Engineer's determination of the portion of the sewerage system's net capital costs predominantly related to each parameter in the relevant year.
- (C) The sum of the total annual accrual year operation and maintenance costs in (A) above and the total annual net capital costs in (B) above shall be used to determine the weighted distribution for wastewater charge parameters of flow, chemical oxygen demand, and suspended solids for each sewerage system for the relevant year.
- (D) The sum of the total annual operation and maintenance costs and the total annual net capital costs and necessary reserves for each sewerage system as determined by the Chief Engineer shall be offset by appropriate revenue sources to determine the remaining revenue required to operate each sewerage system in an accrual year. The remaining revenue required shall be distributed to the three wastewater charge parameters of flow, chemical oxygen demand, and suspended solids as determined in (C) above. The costs attributed to each parameter shall be divided by the projected annual total flow volume and total masses of chemical oxygen demand, and suspended solids, respectively, to be treated by the sewerage system in an accrual year. The projected annual total flow volume and total masses of chemical oxygen demand, and suspended solids shall be based on an estimated mass balance of all wastewater discharges to the sewerage system as determined by the Chief Engineer. The unit wastewater charge rates so determined will be expressed in dollars per million gallons for a_1 and in dollars per thousands pounds for b_1 and c_1 .
- (E) To account for the costs of monitoring, inspection, permitting, enforcement, laboratory services and other associated administrative services, the respective rates for a_1 , b_1 , and c_1 calculated in (D) above shall be multiplied by the respective unit rates for a , b , and c as established for the 1997-98 fiscal year and divided by the respective unit rates for a_1 , b_1 , and c_1 established for the 1997-98 fiscal year. The resulting values, expressed in dollars per million gallons for flow, and in dollars per thousand pounds for COD and suspended solids, shall be the unit wastewater surcharge rates.

For each sewerage system in the Districts, the unit charge rate related to peak flow and designated d (in dollars per gallon per minute of peak flow) shall be equal to the unit charge rate for peak flow adopted for the 1997-98 fiscal year multiplied by the total charge for the relevant year that would be due using the unit rates established in (E) above and the loadings for a sewage unit (260 gallons per day, 1.22 lbs. per day COD, and 0.59 lbs. per day suspended solids) and divided by the total charge that would have been due using the unit rates for the 1997-98 fiscal year and the loadings for a sewage unit.

SECTION - 411 WASTEWATER TREATMENT SURCHARGE STATEMENT

Each industrial discharger, except for those dischargers that fall within a flow classification exempted by the Chief Engineer, shall file annually with the Districts a wastewater treatment surcharge statement. All surcharge statements and any required payments shall be filed on or before August 15 following the end of the fiscal year. Each industrial discharger shall report on

such statement the total annual surcharge due to the Districts and the wastewater discharge data used in making such calculations. Such information shall be provided on a form prepared by the Chief Engineer and shall be signed by the discharger under penalty of perjury. Dischargers shall comply with all instructions which accompany the Districts' forms. The discharger shall submit such additional data as the Chief Engineer may from time to time require in implementing the wastewater treatment surcharge program.

SECTION - 412 PRETREATMENT OF INDUSTRIAL WASTEWATERS

The Chief Engineer may require an industrial discharger to provide wastewater pretreatment systems or facilities whenever the Chief Engineer determines that it is necessary or advisable to treat industrial flows prior to discharge to the sewer, to restrict or prevent the discharge to the sewer of certain waste constituents, to distribute any peak discharges of industrial wastewaters more equally over a long time period, to comply with any state discharge or pretreatment requirements, to comply with federal pretreatment standards, or to accomplish any pretreatment result required by the Chief Engineer in order to effectuate the purposes of this Ordinance. Any pretreatment facilities required by the Chief Engineer shall be provided and maintained at the expense of the industrial wastewater discharger. Pretreatment systems or facilities shall not be installed or operated without the prior written approval of the Chief Engineer. The requirement for such approval, however, shall not absolve the industrial discharger of the responsibility for meeting any industrial wastewater discharge limitation imposed by the Districts or by the state or federal government. If inspections or other information reveal that pretreatment systems and facilities are not installed or operated in conformance with the plans and procedures submitted to and approved by the Districts, or are not operated in compliance with the discharge requirements and limitations imposed by the Districts, the industrial discharger shall make such modifications as are necessary to meet such requirements. In special cases, the Chief Engineer may require construction of sewer lines by the discharger to convey certain industrial wastes to specific trunk sewers in addition to or in lieu of the installation of a pretreatment system. Users who have the potential to discharge significant levels of flammable substances, as defined by the Chief Engineer, shall install and maintain approved combustible gas detection meter systems. All pretreatment systems determined by the Chief Engineer to require engineering design shall have plans prepared and signed by a civil, chemical, or mechanical engineer registered in the State of California or a registered engineer of other suitable discipline as determined by the Chief Engineer.

Gravity separation interceptors, equalization tanks, neutralization chambers, control manholes or other monitoring facilities, and spill containment systems, may be required by the Chief Engineer as he deems necessary to remove prohibited settleable and floatable solids, to equalize wastewater streams varying greatly in quantity and/or quality, to neutralize low or high pH wastewater, to facilitate inspection, flow measurement and sampling, and to prevent discharge to the sewer of quantities of prohibited or restricted materials resulting from a rupture of a tank or pipeline or other such accidental occurrences. Spill containment systems shall conform to guidelines established by the Chief Engineer. Floor drains from commercial or manufacturing buildings, warehouses or multi-use structures shall first discharge to a gravity separation interceptor before entry into the sewer system.

Any discharger which has a pumping plant or long private sewer leading from the industrial wastewater pretreatment system to the nearest public sewer may be required to install a monitoring facility or other equipment on the private sewer immediately before the junction with the public sewer. Such facility shall be required by the Chief Engineer to be designed and

constructed so as to enable Districts' personnel to verify the quantity and quality of wastewater actually discharged into the public sewer.

The Chief Engineer may from time to time adopt specific requirements for pretreatment systems and facilities. Such requirements shall be set forth in the Districts' waste discharge guidelines and shall be summarized in the most recent edition of the Districts' booklet entitled "Information and Instructions for Obtaining an Industrial Wastewater Discharge Permit." This Permit booklet shall be made available at the Districts' offices and at the office of the local sewerage agency having jurisdiction over the local sewers tributary to the Districts' sewerage system. Dischargers shall comply with all pretreatment requirements, requirements for construction of facilities, requirement for wastewater sampling and analysis, and requirements for submittal of permits specified in the waste discharge guidelines and the Permit booklet.

SECTION - 413 SEPARATION OF DOMESTIC AND INDUSTRIAL WASTEWATERS

All domestic wastewaters from rest rooms, showers, drinking fountains, etc., shall be kept separate from all industrial wastewaters until the industrial wastewaters have passed through any required pretreatment system or device and the discharger's monitoring facility or station.

SECTION - 414 WASTEWATER MONITORING AND REPORTING

(A) SURCHARGE REPORTING

Each industrial wastewater discharger shall make such measurements of wastewater flow volumes, flow rates, chemical oxygen demand (COD) and suspended solids (SS) as are necessary to accurately determine its annual wastewater treatment surcharge unless specifically relieved of such obligation by the Chief Engineer as provided under Section 409 of this Ordinance. Each discharger shall take at least the minimum number of flow measurements and wastewater samples for COD and SS analyses as required by the Chief Engineer. Dischargers who fail to perform required monitoring, fail to accurately perform such monitoring, or fail to properly report the results of such monitoring to the Districts shall pay the costs of any Districts' monitoring needed to satisfy applicable monitoring requirements. Dischargers with more than one identifiable waste stream or with large variations or fluctuations in wastewater quantity or quality must take a sufficient number of flow measurements and samples to accurately represent the total wastewater flow from the discharger's facility including each identifiable waste stream, variation or fluctuation. The Chief Engineer may require industrial wastewater dischargers to provide additional or continuous wastewater flow measurement and sampling. If a discharger fails to take the minimum number of wastewater samples or flow measurements, fails to accurately take such samples or measurements, or fails to properly report the results of such monitoring to the Districts, then the Chief Engineer may determine that the discharger's wastewater monitoring, including sampling, analysis, flow measurements or other engineering investigations, shall be undertaken by the Districts with all associated costs of such monitoring to be paid by the discharger.

Wastewater samples and flow measurements reported to the Districts shall be taken from monitoring facilities of a design and configuration approved by the Chief Engineer. Samples shall be composites taken at least once per hour over a 24-hour period, properly refrigerated, and where appropriate, composited according to wastewater flow rates during the 24 hours. Dischargers required to have wastewater flow monitoring systems shall use such systems to obtain accurate flow-proportioned composite

samples, and shall report the flow volumes and flow rates recorded by such systems on their annual surcharge statements. Dischargers shall monitor wastewater discharges which are representative of the entire range of plant operations.

Dischargers shall report to the Districts the analytical results for COD and SS for each wastewater sample taken and analyzed during the fiscal year. Copies of all laboratory results of such analyses shall be submitted with the discharger's annual wastewater treatment surcharge statement. If a discharger believes that an analysis is in error or not truly representative of its wastewater, the discharger shall so state, submit the analysis, and furnish all reasons why the analysis is believed to be erroneous or unrepresentative.

The Districts will take measurements and samples from time to time to verify the wastewater characteristics reported to the Districts. Dischargers shall assist the Districts where necessary to obtain correct and accurate measurements, and shall not interfere with the operations of the Districts' personnel or equipment. Upon audit of a discharger's surcharge statement, the Chief Engineer may include the results of any Districts' monitoring of the discharger's wastewater or substitute Districts' monitoring results for monitoring by the discharger deemed faulty by the Chief Engineer.

Wastewater samples shall be analyzed by a state certified laboratory or laboratory approved by the Chief Engineer. All analyses shall be performed in accordance with the procedures specified by the U.S. Environmental Protection Agency (EPA) in the most current "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (40 Code of Federal Regulations, Part 136) (Guidelines). For those industrial wastewaters which contain unusual quantities or types of wastes, the Chief Engineer may require (1) use of alternate methods or procedures specified in the Guidelines or the most current of Standard Methods for the Examination of Water and Wastewater (Standard Methods), (2) use of modifications to the methods or procedures specified in the Guidelines or Standard Methods, or (3) use of any other test method or procedure that gives a reasonable value of the pollutant. If no appropriate procedure is provided in the above references, the Chief Engineer may approve the standard procedure of the industry or other procedure to measure wastewater constituents. For wastewater analyses that would be significantly affected by conditions of the wastewater sample which are different from normal conditions prevailing in the sewerage system (e.g., pH), the Districts may require that the sample be adjusted to normal sewerage system conditions before analysis. Any independent laboratory or discharger performing wastewater analyses shall furnish any required analytical data or information on the procedures or equipment used if requested to do so by the Chief Engineer. Dischargers shall clearly identify on their reports to the Districts any analyses which were not performed in accordance with the procedures provided in the above references.

All sample results, and all other information, submitted to the Districts shall be verified under penalty of perjury by an authorized representative of the discharger who is also either a general partner or proprietor, or, if a corporation, a principal executive officer of at least the level of vice president. An authorized representative of the discharger shall further certify that all sample results submitted to the Districts are properly composited samples of the discharger's wastewater taken from the discharger's approved monitoring facility at the times and locations stated and in full compliance with all Districts' requirements for sample collection. If samples are collected by an outside consultant, the consultant shall also certify that the samples were collected in full

compliance with Districts' requirements. All reports of the results of wastewater analysis shall be signed by the person performing the analysis or other authorized representative of the analytical laboratory performing the analysis, and any limiting words on the report notwithstanding, such signature shall constitute a certificate under penalty of perjury by such person that the reported analysis was actually performed on the sample identified in the report, that the analysis was performed in accordance with the procedures specified in this Ordinance, and that the results described in the report are the true results of the analysis performed.

(B) WASTEWATER MONITORING AND REPORTING FOR OTHER PURPOSES

In addition to the measurements and samples required for surcharge reporting purposes, each industrial wastewater discharger shall make such other measurements of wastewater constituents as may be specified by the Chief Engineer or required under applicable state law, federal pretreatment standards, or federal regulations. Wastewater flow measurements and samples shall be collected and analyzed and the results submitted under penalty of perjury in the same form as provided in this Section 414 (A) for flow measurements and samples required for surcharge reporting purposes, or as otherwise provided by the Chief Engineer, and shall be reported to the Districts at such times as may be specified by the Chief Engineer.

Dischargers who fail to perform any required monitoring, fail to accurately perform such monitoring, or fail to properly report to the Districts the results of such monitoring, shall pay all costs of any Districts' monitoring needed to satisfy applicable monitoring requirements. Dischargers shall develop compliance schedules for installation of technology required to meet applicable federal pretreatment standards, Districts' pretreatment requirements, and any other applicable discharge requirements established by state law or federal regulations. Dischargers subject to such standards and requirements shall submit to the Districts all notices and self-monitoring reports as are necessary to assess and assure compliance with such standards and requirements including, but not limited to, compliance schedules for the installation of required pretreatment equipment or technology, Baseline Monitoring Reports, Compliance Schedule Progress Reports, Final Compliance Reports, and Notices of Slug Loading. All dischargers shall develop, submit and adhere to any self-monitoring reports and compliance schedules required by the Chief Engineer.

(C) WASTEWATER MONITORING FACILITIES

All industrial wastewater dischargers required to obtain a Permit shall furnish, install and properly maintain a monitoring facility for wastewater sampling. This monitoring facility shall be of a design or configuration approved by the Chief Engineer, which may include wastewater flow measurement equipment, automatic flow-proportional sampling equipment and automatic wastewater analysis and data recording equipment. The wastewater monitoring facility shall be used to evaluate the quantity and quality of industrial wastewater discharge to the public sewer. Each industrial discharger, as a part of its application for obtaining a Permit, shall propose a suitable location and design for the wastewater monitoring facility. Upon approval of the monitoring facility by the Districts, the discharger shall perform wastewater monitoring at this facility and shall agree to allow the use of this facility for industrial wastewater monitoring by the Districts. The monitoring facility shall be located so as to be safe and accessible to Districts' employees, and shall be constructed in accordance with the Districts' requirements, and all applicable local building codes and other local construction requirements. The discharger's proposal for a wastewater monitoring facility shall comply with Districts'

design requirements and shall be reviewed and, if found to be suitable, approved by the Chief Engineer. Plans for all wastewater monitoring facilities, including flow measurement and sampling systems, determined by the Chief Engineer to require engineering design, shall be prepared and signed by a civil, chemical or mechanical engineer registered in the State of California or a registered engineer of other suitable discipline as determined by the Chief Engineer.

The discharger's wastewater sampling analysis and flow measurement procedures, equipment, and results shall be subject to inspection by the Districts at any time. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times by the discharger. The failure of a discharger to keep approved wastewater monitoring facilities clean and in good working order shall not be grounds for the discharger to claim that any sample results are unrepresentative of the discharger's wastewater. Flow measurement systems shall be regularly maintained and calibrated in accordance with guidelines established by the Chief Engineer.

Industrial wastewater records and documents, including sample analysis reports, waste haulers' reports, flow meter charts, pH meter charts, and other records of monitoring and sampling activities and reports shall be made available for inspection and copying to the Chief Engineer upon request. Copies or facsimiles of these records shall be provided to the Districts at the discharger's expense upon request. The discharger's records must include for all samples:

- 1 The date, exact location, method and time of sampling and the names of the person or persons taking the samples;
- 2 The dates analyses were performed;
- 3 The person performing the analyses;
- 4 The analytical techniques/methods used; and
- 5 The results of such analyses.

Each industrial discharger shall retain for a minimum of four years any and all records of wastewater monitoring and sampling activities and analytical results. This period of retention shall be extended during the course of any unresolved disputes or litigation involving the discharger and the Districts, or when requested by the Chief Engineer.

SECTION - 415 DISCREPANCIES BETWEEN ACTUAL AND REPORTED INDUSTRIAL WASTEWATER DISCHARGE QUANTITIES

Should Districts' measurements or other investigations indicate that an industrial wastewater discharger is discharging a quantity of wastewater, chemical oxygen demand, suspended solids, or other wastewater constituent or at a flow rate significantly in excess of that stated in the Districts' Permit, the discharger shall apply for a revised Permit.

Should measurements or other investigations indicate that an industrial wastewater discharger has discharged industrial wastewater, chemical oxygen demand, suspended solids or other wastewater constituents at rates or in quantities in excess of those stated by the discharger on a

wastewater treatment surcharge statement or other report furnished by the discharger to the Districts, the discharger shall furnish all information in its possession relevant to the apparent discrepancy.

If, after making proper allowance for relevant factors, the Chief Engineer is unable to resolve the discrepancy on the basis of the information available, the Chief Engineer may order that additional information be obtained by Districts' employees through engineering investigations, tests, flow measurements and wastewater sampling and analyses. All costs of engineering investigations, flow measurements, wastewater sampling and analyses and other actions performed by the Districts to resolve the discrepancy shall be paid for by the discharger.

The Chief Engineer shall then make a determination of the amount of any wastewater treatment and disposal charges plus charges for costs of obtaining additional information which are due to the Districts, together with any interest and penalty charges due, and shall notify the discharger of the total charges due. The discharger shall pay such amounts within 45 days after service of written notice. For the purpose of establishing the correct wastewater treatment and disposal charges, the data obtained in these samplings, along with any other relevant information obtained by the Districts or presented by the discharger, shall be used by the Chief Engineer. If an evaluation of wastewater monitoring data of the discharger by the Chief Engineer indicates that some or all of the discharger's data are statistically or otherwise unrelated to the data obtained by the Districts and there is no satisfactory explanation for such discrepancy, the Chief Engineer may reject any or all of the data submitted by the discharger. The Chief Engineer may then use all or portions of data obtained by the Districts to determine appropriate wastewater treatment and disposal charges.

The discharger may, within 12 months after payment of a wastewater treatment surcharge, submit a request for a refund together with appropriate supporting data. The Districts will consider this request and if a refund is due it shall be granted.

SECTION - 416 WASTEWATER DISCHARGER CLASSIFICATIONS

The Chief Engineer may classify wastewater dischargers by categories and establish a wastewater treatment surcharge based upon average flow quality and flow quantity for the category. Such classification may be adjusted by some commonly recognized parameter selected by the Chief Engineer that establishes the relative size of the wastewater discharger being charged.

SECTION - 417 DAMAGES CAUSED BY WASTEWATER DISCHARGES

Any person who discharges any waste which causes or contributes to any damage, injury, excessive wear or deterioration of any Districts' facilities, requires the clean up, removal, reconstruction or replacement of such facilities, brings about any detrimental effects on treatment processes, or causes any other damage including the imposition of fines by state, federal, or other regulatory agencies on the Districts shall be liable to the Districts for all costs and expenses occasioned thereby including administrative costs. If more than one discharger contributed to such damages, each contributing discharger shall be jointly and severally liable to the Districts for all such damages. The Chief Engineer may apportion such damages among the contributing dischargers in accordance with his assessment of the relative contribution of each discharger.

SECTION - 418 DISPOSAL OF VEHICLE-TRANSPORTED LIQUID WASTES TO THE SEWERAGE SYSTEM

No person shall discharge or cause to be discharged any wastes from septic tanks, seepage pits, cesspools, chemical toilets or other approved waste-holding devices, any industrial liquid wastes or any other liquid wastes from a vacuum pumping truck or other liquid transport vehicles, directly or indirectly to the Districts' sewerage facilities without first obtaining a Districts' Permit for Wastewater Transport Truck to Discharge to the Sewerage System (Truck Permit). A separate Truck Permit shall be required for each wastewater transport truck that discharges to the Districts' sewerage system. No person shall discharge any hazardous wastes, as defined by federal or state law, from any vehicle directly or indirectly to the Districts' sewerage system.

A holder of a Truck Permit shall discharge wastewater only at approved locations, and may discharge only domestic wastewater from septic tanks, seepage pits, cesspools, chemical toilets or approved waste-holding devices. Discharge of industrial wastes or any wastes other than specified above is prohibited unless a Districts' Permit for Industrial Wastewater Discharge (Permit) has first been obtained by the generator of such wastes together with the written permission of the Chief Engineer to discharge wastewater at the approved location. Emergency discharge of wastewater not covered under an existing Districts' Permit or Truck Permit may be granted only through written permission of the Chief Engineer, and shall be made only at the locations and times designated by the Chief Engineer.

Applicants for a Truck Permit shall complete a Districts' application form available at the offices of the Districts. Upon receipt of a fully completed application form and all required information, the application shall be processed and reviewed by the Chief Engineer. If approved, one copy of the application form shall be returned to the applicant and, when properly signed by the Chief Engineer, the application form shall constitute a valid Truck Permit. Periodic renewal of the Truck Permit is required.

No person shall discharge any prohibited or restricted wastes as described in Section 406 of this Ordinance at any Districts' approved disposal locations for wastewater transport trucks. The Districts may require proof of the origin of truck-transported wastes, and physical and chemical analysis of any wastes before permission is granted to dispose of such wastes at approved locations. The Districts may reject wastes that the Chief Engineer has reason to believe may be a hazardous waste, an industrial waste that has not been properly permitted, or any other waste with unusual or unknown characteristics which may require further analyses to determine its acceptability for sewer disposal.

Holders of the Truck Permit shall pay all applicable permit fees, permit renewal fees and wastewater disposal fees. The wastewater disposal fee may be paid with Liquid Waste Disposal Fee Coupons available for purchase at Districts' offices or by other methods of payment approved by the Chief Engineer.

The Chief Engineer may revoke or suspend a Truck Permit in accordance with the procedures described in Sections 404 and 405 upon a finding that the permit holder has violated any provision of this Ordinance. Any person whose Truck Permit has been suspended or revoked shall immediately cease and desist all discharge of truck-transported wastes to the Districts' sewerage system. Any person whose Truck Permit has been revoked shall surrender to the Districts any identification decals or devices that have been issued to the person by the Districts.

Any person found to be dumping truck-transported wastes directly or indirectly to the Districts' sewerage system, including sewers owned by the local sewerage agency and discharging to the Districts' sewerage system, at any location not specifically authorized by the Districts for such purpose, shall be in violation of this Ordinance. Such person shall at the direction of the Chief Engineer be subject to all enforcement provisions of Section 202 including prohibition by the Districts from any future use of the Districts' sewerage system for disposal of wastes from wastewater transport trucks.

Recreational vehicle sanitary waste disposal stations shall also be subject to regulation by the Chief Engineer. Such regulation may include a permit requirement and the imposition of appropriate fees and charges.

SECTION - 419 TRADE SECRETS

The Districts have determined that the public interest served by not making public any records or other information submitted by dischargers which contain or constitute trade secrets clearly outweighs the public interest served by the disclosure of said records. Accordingly, any trade secrets acquired by the Districts in the course of implementation or enforcement of this Ordinance shall not be made public except to the extent necessary to enforce this Ordinance.

Any claim or trade secret status must be asserted at the time of submission of such information to the Districts by stamping the words "Confidential Business Information" on each page or document containing such information. All information on wastewater effluent quality or quantity furnished by the company or obtained by the Districts shall not be eligible for trade secret status and shall be available as public information.

SECTION - 420 INDUSTRIAL WASTEWATER DISCHARGERS WITHIN A DISTRICT BUT TRIBUTARY TO THE CITY OF LOS ANGELES' TREATMENT FACILITIES

Industrial wastewater discharge permits for dischargers tributary to the treatment facilities of the City of Los Angeles will be issued by the City after approval by the Districts. Inspection of the discharger's plant to determine compliance with industrial wastewater discharge regulations may be made by either City or Districts' personnel under a coordinated plan of inspection developed by the two agencies. Industrial wastewater discharge regulations and effluent limitations of both agencies will apply to the discharger unless one agency specifically waives its requirements.

SECTION - 421 PUBLICATION OF NAMES OF DISCHARGERS IN SIGNIFICANT NONCOMPLIANCE

As required by federal law, the Chief Engineer shall, at least annually, provide public notice in a local newspaper of the identity of those dischargers who are deemed under federal regulations to be significant violators of or in significant noncompliance with the provisions of this Ordinance which implement the federal industrial waste pretreatment program.

SECTION - 422 WASTEWATER TREATMENT USER CHARGE

The Chief Engineer may from time to time establish categories of industrial dischargers having similar wastewater characteristics and with respect to which the Chief Engineer has determined that the burden of complying with Sections 411 and 414 is disproportionate to the anticipated revenue to be derived therefrom. Such industrial dischargers may, at the direction of the Chief

Engineer, be required to annually pay a wastewater treatment user charge in lieu of the wastewater treatment surcharge provided for by Section 409. Wastewater treatment user charges shall be due and payable on the dates set forth in Section 214 or less frequently upon the determination of the Chief Engineer. Wastewater dischargers subject to such user charges may be required to periodically submit information necessary for the determination of charge rates or total charges. User charges shall be established by the Chief Engineer to equitably defray costs incurred by the Districts for collection, treatment and disposal of the wastewater from dischargers within these established categories. The Chief Engineer may permit or require an industrial discharger otherwise subject to a wastewater treatment user charge to pay a wastewater treatment surcharge under Section 409 in lieu of the user charge.

SECTION - 423 SPECIAL CHARGES FOR NONCONVENTIONAL INDUSTRIAL WASTEWATER CONSTITUENTS

Special charges for nonconventional industrial wastewater constituents shall be paid by those industrial dischargers who discharge thiosulfate, volatile organic compounds, or other nonconventional industrial wastewater constituents in excess of any threshold values for such constituents as may be established from time to time by the Chief Engineer. Special charges for nonconventional wastewater constituents shall be determined by the Chief Engineer and shall be based on the appropriate Districts' sewerage system's maintenance, operation and capital expenditures for providing collection, treatment and disposal services in connection with such constituents.

Industrial dischargers subject to special charges shall perform any additional monitoring and sampling required by the Chief Engineer for the proper assessment of such charges. Such monitoring and sampling shall be performed in accordance with any other specific requirements established by the Chief Engineer for each industrial wastewater constituent subject to special charges. Special charges shall be due and payable upon service of a notice of charges as provided in Section 214, or in accordance with such other billing, reporting and payment procedures established by the Chief Engineer for each such industrial wastewater constituent.

SECTION - 424 WASTE DISCHARGE GUIDELINES

The Chief Engineer may from time to time promulgate guidelines for pretreatment systems, spill containment, centralized waste treatment facilities, flow measurement, rainwater disposal, combustible gas monitoring systems, and such other matters as he deems appropriate to effectuate the purposes of this Ordinance. Such guidelines shall be available upon request.

APPENDIX A - DEFINITIONS

The definitions given in this part shall be used in the interpretation of this Ordinance, the issuance of permits, the making of charges for service and all other operations of this Ordinance unless another meaning for the word is apparent from the context.

SECTION - A-1 ACCRUAL YEAR

"Accrual Year" shall mean the twelve-month period for which charges shall be determined.

SECTION - A-2 ADMINISTRATIVE COSTS

"Administrative Costs" shall include but not be limited to (1) the salaries and overhead administrative costs of all Districts' employees who participated in the investigation, repair, clean-up and/or any other activities related to excessive sewer maintenance or damages incurred by Districts' facilities, or related to enforcement of any Section of this Ordinance, (2) the actual costs of materials and services used including monitoring and laboratory costs, (3) Districts' vehicle expenses used to transport such personnel and equipment and (4) costs for Districts' legal counsel.

SECTION - A-3 BOARD

"Board" or "Board of Directors" shall mean the Board of Directors of County Sanitation District No. 2 of Los Angeles County.

SECTION - A-4 BOD OR BIOCHEMICAL OXYGEN DEMAND

"BOD" or "biochemical oxygen demand" shall mean the measure of decomposable organic material in domestic or industrial wastewaters as represented by the oxygen utilized over a period of five (5) days at 20° C and as determined by the appropriate procedure in Standard Methods.

SECTION - A-5 CHIEF ENGINEER

"Chief Engineer" shall mean the Chief Engineer and General Manager of the County Sanitation Districts of Los Angeles County or his duly authorized deputy or agent.

SECTION - A-6 COD OR CHEMICAL OXYGEN DEMAND

"COD" or "chemical oxygen demand" shall mean the measure of chemically decomposable material in domestic or industrial wastewaters as represented by the oxygen utilized as determined by the appropriate procedure described in Standard Methods.

SECTION - A-7 CONNECTION FEE ORDINANCE

"Connection Fee Ordinance" shall mean an ordinance prescribing fees for the privilege of connecting any parcel within the boundaries of a County Sanitation District of Los Angeles County directly or indirectly to the sewerage system, or for increasing the strength and/or quantity of wastewater attributable to a connected parcel within the District, and providing for the collection of such charges adopted by the various County Sanitation Districts of Los Angeles County as it may be revised from time to time.

SECTION - A-8 CONTIGUOUS PROPERTY

"Contiguous Property" shall mean property which is owned or hired by the industrial wastewater discharger, is contiguous to the source of industrial wastewater discharge, and is made up of land parcels with common boundaries or parcels separated only by streets or other publicly owned or operated rights-of-way. Publicly owned rights-of-way include those owned or operated by railroad, pipeline, water, power, electrical, gas, telephone or other public utility companies. Only those parcels having a common boundary, if the public right-of-way is removed, shall be considered to be contiguous.

SECTION - A-9 CONTROL MANHOLE

"Control Manhole" shall mean a structure such as a manhole, vault, or other device through which industrial wastewater flows without dilution by domestic wastewaters. A control manhole is intended to act as a flow measurement and wastewater sampling point and shall be adequately designed for these purposes.

SECTION - A-10 COUNTY

"County" shall mean the County of Los Angeles.

SECTION - A-11 DISCHARGER

"Discharger" shall mean any person that discharges or causes a discharge to a public sewer.

SECTION - A-12 DISSOLVED SOLIDS

"Dissolved solids" or "dissolved matter" shall mean the solid matter in solution in the wastewater under conditions normally found in the sewer and shall be obtained by evaporation of a sample from which all suspended matter has been removed by filtration as determined by the procedures in Standard Methods.

SECTION - A-13 DISTRICTS

Districts" shall mean either all or any of the individual County Sanitation Districts of Los Angeles County.

SECTION - A-14 DISTRICT NO. 2

"District No. 2" shall mean County Sanitation District No. 2 of Los Angeles County.

SECTION - A-15 DOMESTIC WASTEWATER

"Domestic wastewater" shall mean the water-carried wastes produced from non-industrial activities and which result from normal human living processes irrespective of where these wastes are discharged to the sewerage system. The term Domestic Wastewater shall be synonymous with the term Sanitary Flow. See Section A-42.

SECTION - A-16 EFFLUENT

"Effluent" shall mean the liquid outflow of any facility designed to treat, convey or retain wastewater.

SECTION - A-17 EQUALIZATION TANK

"Equalization Tank" shall mean a container of sufficient capacity to hold a significant portion of an industrial wastewater discharger's daily flow to permit the mixing, prior to discharge to the sewer, of low and high strength wastes that may occur at different times during the day.

SECTION - A-18 FEDERAL PRETREATMENT STANDARDS

"Federal Pretreatment Standards" shall mean and include the "National Pretreatment Standard" defined in Title 40, Code of Federal Regulations (CFR), Part 403, Section 403.2(j), and set forth in 40 CFR, Part 403, Section 403.1 and following, and the "National Categorical Pretreatment Standards" set forth in 40 CFR, Chapter I, Subchapter N, Part 405 and following.

SECTION - A-19 FEDERAL REGULATIONS

"Federal Regulations" shall mean any applicable provision of the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, Title 33, United States Code, Section 1251 and following, and any regulation promulgated by the U.S. Environmental Protection Agency under Title 40 CFR implementing that act.

SECTION - A-20 FISCAL YEAR

"Fiscal Year" shall mean the twelve-month period beginning on July 1 and ending on June 30 of the following calendar year.

SECTION - A-21 FORMULA

"Formula" shall mean the Wastewater Treatment Surcharge Formula as set forth in Section 409.

SECTION - A-22 HOUSE CONNECTION

"House Connection" shall mean the sewer connecting the building sewer or building waste drainage system to the public sewer for the purpose of conveying domestic wastewater.

SECTION - A-23 INDUSTRIAL CONNECTION SEWER

"Industrial Connection Sewer" shall mean the sewer connecting the building sewer or building waste drainage system to the public sewer for the purpose of conveying industrial wastewater.

SECTION - A-24 INDUSTRIAL DISCHARGER OR INDUSTRIAL COMPANY

"Industrial Discharger" or "Industrial Company" shall mean any person who discharges any measurable quantity of industrial wastewater to any of the Districts' sewerage systems or any other system tributary thereto.

SECTION - A-25 INDUSTRIAL WASTEWATER

"Industrial Wastewater" shall mean all liquid-carried wastes of the community, excluding domestic wastewater, rainwater, groundwater, stormwater and drainage of contaminated and uncontaminated water. Industrial wastewater may include all wastewater from any producing, manufacturing, processing, institutional, commercial, agricultural, or other operation where the wastewater discharged includes significant quantities of wastes of non-human origin. All liquid wastes hauled by truck, rail, or another means for disposal to the sewer shall be considered as industrial wastewater regardless of the original source of the wastes. Hauled domestic wastewater is included in the category of industrial wastewater.

SECTION - A-26 INSPECTOR AND MONITORING PERSONNEL

"Inspector" shall mean a person authorized by the Chief Engineer to inspect wastewater generation, conveyance, processing and disposal facilities. "Monitoring Personnel" shall mean persons authorized by the Chief Engineer to install and operate analytical instruments, sampling equipment, flow meters, and to perform other similar work at wastewater generation, conveyance, treatment and disposal facilities.

SECTION - A-27 JOINT OUTFALL DISTRICTS

"Joint Outfall Districts" shall mean those Districts signatory to the current Joint Outfall Agreement.

SECTION - A-28 GRAVITY SEPARATION INTERCEPTOR

"Gravity Separation Interceptor" shall mean any facility designed, constructed and operated for the purpose of removing and retaining dangerous, deleterious or prohibited constituents from wastewater by differential gravity separation before discharge to the public sewer.

SECTION - A-29 LATERAL SEWER, COLLECTING SEWER OR MAIN LINE SEWER

"Lateral Sewer," "Collecting Sewer" or "Main Line Sewer" shall mean the public sewer usually eight (8) inches or larger in diameter and used to collect wastewater from house connection and industrial connection sewers and transport it to trunk sewers. Lateral, collecting or main line sewers are normally built and maintained by the local sewerage agency.

SECTION - A-30 LOCAL SEWERING AGENCY

"Local Sewering Agency" shall mean the city or county or other public agency legally authorized to construct, maintain and operate a system of lateral or collecting sewers.

SECTION - A-31 NET CAPITAL

"Net Capital" shall mean the total anticipated capital contribution of a District for the accrual year less all anticipated grants, gifts, and donations.

SECTION - A-32 NONCONVENTIONAL INDUSTRIAL WASTEWATER CONSTITUENT

"Nonconventional Industrial Wastewater Constituent" shall mean any chemical or compound other than COD and suspended solids.

SECTION - A-33 ORDINANCE

"Ordinance" shall mean, unless otherwise specified, this Ordinance.

SECTION - A-34 PEAK FLOW RATE

"Peak Flow Rate" shall mean the average rate at which wastewater is discharged to a public sewer during the highest 30-minute flow period during the accrual period.

SECTION - A-35 PERSON

"Person" shall mean any individual, partnership, committee, association, corporation, public agency and any other organization or group of persons, public or private.

SECTION - A-36 PUBLIC CORPORATION

"Public Corporation" shall mean this state and any political subdivision thereof, any incorporated municipality therein, any public agency of the state or any political subdivision thereof, or any corporate municipal instrumentality of this state.

SECTION - A-37 PUBLIC SEWER

"Public Sewer" shall mean any sewer dedicated to public use and whose use is controlled by a public corporation.

SECTION - A-38 RADIOACTIVE MATERIAL

"Radioactive Material" shall mean material containing chemical elements that spontaneously change their atomic structure by emitting any particles, rays or energy forms.

SECTION - A-39 RAINWATER

"Rainwater" shall mean the volume of water resulting from precipitation which directly falls on a parcel.

SECTION - A-40 RESIDUE

"Residue" shall mean the settleable solids and semi-liquid suspension of solids separated from the liquid fraction of wastewater during treatment. These solids shall include, but not be limited to: compost, filter cake, sludge, centrate and centrifuged solids.

SECTION - A-41 REVENUE OR APPROPRIATE REVENUE

"Revenue" or "Appropriate Revenue" shall include revenue from the sale of by-products, investment income, annexation fees, connection fees, grants, gifts, donations, ad valorem tax allocations, and from other miscellaneous sources.

SECTION - A-42 SANITARY FLOW

"Sanitary Flow" shall mean the same as the term Domestic Wastewater. See Section A-15.

SECTION - A-43 SECTION

"Section" shall mean a section of this Ordinance.

SECTION - A-44 SEWAGE

"Sewage" shall mean wastewater.

SECTION - A-45 SEWAGE PUMPING PLANT

"Sewage Pumping Plant" shall mean any facility designed and constructed to raise wastewater in elevation or to overcome head losses due to pipeline friction.

SECTION - A-46 SEWER CAPACITY BASELINE

"Sewer Capacity Baseline" shall mean the number of capacity units existing at a specific property location as determined on the basis of the current *Connection Fee Ordinance* for the District within which the specific property is located. A capacity unit is the burden that a typical single family home places on the sewerage system in terms of wastewater flow and strength.

SECTION - A-47 SEWER CONNECTION FEE

"Sewer Connection Fee" shall mean the fee established by the *Connection Fee Ordinance* of the District in which the specific property is located. Connection Fee Ordinances establish varying fees for the privilege of connecting a property parcel of land to the Districts' sewerage system. The connection fee charges are established based upon the wastewater quantity and strength.

SECTION - A-48 SEWERAGE

"Sewerage" shall mean any and all facilities used for collecting, conveying, pumping, treating and disposing of waste and wastewater.

SECTION - A-49 SEWERAGE SYSTEM

"Sewerage System" shall mean a network of waste and wastewater collection, conveyance, treatment and disposal facilities interconnected by sewers, and owned by the Districts, except with respect to those Districts that do not own, in whole or in part, wastewater treatment or disposal facilities in which event it shall mean a network of wastewater collection and conveyance facilities.

SECTION - A-50 SHALL AND MAY

"Shall" is mandatory and "May" is permissive.

SECTION - A-51 DISCHARGERS IN SIGNIFICANT NONCOMPLIANCE

"Dischargers in Significant Noncompliance" shall mean industrial users who were found to be significantly violating applicable pretreatment standards or other pretreatment requirements. A significant violation is defined as a violation which remains uncorrected 45 days after notification

of noncompliance, or uncorrected after a time period as otherwise specified by EPA, which is part of a pattern of noncompliance over a twelve-month period, which involves a failure to accurately report noncompliance, or which resulted in the Districts exercising its emergency authority.

SECTION - A-52 SOLID WASTES

"Solid Wastes" shall mean the nonliquid-carried wastes normally considered to be suitable for disposal with refuse at sanitary landfill refuse disposal sites.

SECTION - A-53 SPILL CONTAINMENT SYSTEM

"Spill Containment System" shall mean a system of dikes, walls, barriers, berms, or other devices designed to contain a spillage of the liquid contents of containers.

SECTION - A-54 STANDARD METHODS

"Standard Methods" shall mean the most current edition of *Standard Methods for the Examination of Water and Wastewater* as published by the American Public Health Association.

SECTION - A-55 STORMWATER

"Stormwater" shall mean the volume of water following a storm which runs off or travels over the ground surface to a drainage area or channel.

SECTION - A-56 SUSPENDED SOLIDS

"Suspended Solids" or "Suspended Matter" shall mean the insoluble solid matter suspended in wastewater under conditions normally found in sewers that is separable by laboratory filtration in accordance with the procedure described in Standard Methods.

SECTION - A-57 TRADE SECRETS

"Trade Secrets" shall include but shall not be limited to any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is patented, which is known only to certain individuals within a commercial concern who are using it to fabricate, produce, or compound an article of trade or a service having commercial value and which gives its user an opportunity to obtain a business advantage over competitors who do not know or use it. Trade secrets shall not include industrial wastewater effluent data.

SECTION - A-58 TRUNK SEWER

"Trunk Sewer" shall mean a sewer constructed, maintained and operated by the Districts that conveys wastewater to Districts' treatment facilities and into which lateral and collecting sewers discharge.

SECTION - A-59 USER

"User" shall mean discharger, see Section A-11.

SECTION - A-60 WASTEWATER

"Wastewater" shall mean the liquid-carried wastes of the community and all constituents and residues thereof. Wastewater includes domestic and industrial wastewater but does not include rainwater, groundwater, stormwater or drainage of other water.

SECTION - A-61 SIGNIFICANT WASTEWATER DISCHARGE

Significant wastewater discharges, for the purpose of establishing the peak flow charge M factor in Section 409, shall mean those discharges during periods where the effluent flows are at least 50 percent of the annual average hourly rate.

For further information contact:
*Sanitation Districts of Los Angeles County
Industrial Waste Section
1955 Workman Mill Road
P.O. Box 4998
Whittier, CA 90607
(562) 699-7411, extension 2900*

2. Industrial Waste Pre-Treatment Program - Los Angeles County Sanitation District

2008 ANNUAL REPORT

INDUSTRIAL WASTE PRETREATMENT PROGRAM

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

STEPHEN R. MAGUIN
CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED
February 27, 2009

EXHIBIT B

INFORMATION AND INSTRUCTIONS FOR OBTAINING AN INDUSTRIAL
WASTEWATER DISCHARGE PERMIT



1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, ext. 2900
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<http://www.lacsd.org/>

Information and Instructions for Obtaining an Industrial Wastewater Discharge Permit

Stephen R. Maguin
Chief Engineer and General Manager

12/2005
Docs: 578871

NOTE TO THE APPLICANT

This instruction booklet was developed to assist the applicant in preparing an adequate submittal to obtain an industrial wastewater discharge permit. Detailed instructions on how to prepare a complete permit submittal as well as all the necessary forms are included in sections 3 and 6 of the booklet. However, the applicant is strongly encouraged to read the other sections, because they contain valuable information concerning the Districts' permit review process and guidelines. Review of these sections is essential in the preparation of an adequate permit submittal, which will help the Districts expedite the issuance of the permit.

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1. INTRODUCTION

The Sanitation Districts of Los Angeles County (Districts) are a group of special districts serving the wastewater and solid waste management needs of over five million people and 3,000 industrial users in Los Angeles County. The Districts were formed under the County Sanitation District Act, passed in 1923 by the California State Legislature. This Act provides for the formation of sewerage authorities based not on political boundaries but rather on the geographic boundaries of the waste disposal problems to be solved.

The agency is currently made up of 24 separate Sanitation Districts, serving all or parts of more than 80 cities and unincorporated areas within Los Angeles County. Although each District has a separate Board of Directors consisting of the presiding officers of the local jurisdictions within the District, all 24 Districts work cooperatively under the *Joint Administration Agreement*. This Agreement provides for a single, centralized administrative organization to coordinate the Districts' affairs.

The Districts currently own and operate eleven wastewater treatment plants which handle over 500 million gallons per day (mgd) of wastewater. Treated effluents from these facilities are either discharged to the ocean, surface waters or land, or are reused for applications such as landscape irrigation, groundwater recharge, and industrial processing. In addition to the treatment plants, the Districts operate and maintain over 1,200 miles of trunk sewers and 50 pumping plants for conveyance of wastewater.

The Districts adopted a [Wastewater Ordinance](#) effective April 1, 1972, as amended on July 1, 1980, July 1, 1983, November 1, 1989, and July 1, 1998 to protect and finance the operation of the Districts' wastewater conveyance, treatment, and disposal facilities. Individual Districts also adopted [Connection Fee Ordinances](#) in 1981 (which were amended in 1984, 1990, 1992, and 1997). Companies that discharge industrial wastewater to the sewerage system are governed by both the [Wastewater Ordinance](#) and the [Connection Fee Ordinance](#) for the District in which the discharge is located. These legal mechanisms establish the Districts' Industrial Wastewater Discharge Permit, [Connection Fee](#), and [Surcharge](#) Programs. The Industrial Wastewater Discharge Permit Program allows for the regulation of industrial wastewater dischargers to protect the public health, environment, and the public sewerage system. The Surcharge Program requires all industrial companies discharging to the Districts' sewerage system to pay their fair share of the wastewater treatment and disposal costs. The [Connection Fee](#) Program requires all new users of the Districts' sewerage system, as well as existing users that significantly increase the quantity or strength of their wastewater discharge, to pay their fair share of the costs for providing additional conveyance, treatment, and disposal facilities.

1.1 Industrial Wastewater Discharge Permit Program

The [Wastewater Ordinance](#) requires any business that desires to discharge industrial wastewater to the Districts' sewerage system to first obtain an Industrial Wastewater Discharge Permit. The permit program provides a means for the Districts to protect sewerage facilities and personnel, the public and the environment through the regulation of industrial wastewater dischargers. Industrial wastewater is defined as all wastewater from any manufacturing, processing, institutional, commercial, or agricultural operation, or any operation where the wastewater discharged includes significant quantities of waste of non-human origin.

1.2 Companies Exempt From Obtaining an Industrial Wastewater Discharge Permit

Businesses that discharge only domestic wastewaters (wastewaters from restrooms, drinking fountains, showers, or air conditioners used for human comfort), or businesses that are determined to have an insignificant impact on the Districts' facilities (listed on page 2 as exempt companies), may not be required to obtain an Industrial Wastewater Discharge Permit. However, exemption from obtaining a Permit does not relieve a company of the responsibility to comply with conditions regulating prohibited and restricted waste discharges, or rainwater diversion requirements specified in the Districts'

[Wastewater Ordinance](#). Businesses with no other industrial discharge that utilize a rainwater switch to divert rainwater from the sanitary sewer to the storm drain may be required to obtain a permit.

Exempt Companies:

The criteria listed below are to be used in determining if a facility is exempt from obtaining an Industrial Wastewater Discharge Permit. This determination is to be made only by Districts' personnel. Facilities determined by the Districts to have a potential adverse impact on the sewerage system may be required to obtain a permit.

1. All restaurants and hotels
2. Small food processing establishments with wastewater flows less than 500 gallons per day (Exception: facilities discharging excessive oil and grease, excessive dissolved sulfides or high-strength waste.)
3. All retail grocery stores (Exception: centralized food processing facilities for distribution to other grocery stores.)
4. All 1-Hour photo shops and small photo processing facilities (Exception: centralized film processing facilities.)
5. School and commercial laboratories
6. Medical and professional buildings (Exception: hospitals with overnight beds.)
7. All pet shops, animal kennels, animal hospitals and animal shelters
8. Warehouses
9. Auto dealers and auto repair shops (Exception: radiator shops.)
10. Car washes with flows less than six million gallons per year
11. All automotive service stations
12. Recreational vehicle dump stations
13. Other companies may be exempt as determined on a case-by-case basis

Exemption from the Districts' Industrial Wastewater Discharge Permit does not exempt a company from permit requirements imposed by the [Los Angeles County Department of Public Works](#) or the city in which the company is located (referred to as the local agency). The local agency should be contacted to determine if a permit is required. Building permits, plumbing permits, and sewer connection permits do not constitute Industrial Wastewater Discharge Permits and must be obtained separately. In fact, for construction of new industrial facilities, building permits cannot be obtained without first obtaining a Districts' Industrial Wastewater Discharge Permit.

A separate permit application must be filed for each connection to the public sewer that carries, or will carry, industrial wastewater. Whenever feasible, as determined by the Districts, consolidation of existing multiple connections from each individual discharger will be required. In general, the policy for existing industrial facilities is that additional permits for new sewer connections will not be granted; new wastewater discharges should be accommodated by obtaining a revised permit for the existing connection. For facilities which involve new construction, only one industrial wastewater connection to the public sewer will be allowed.

Industrial Wastewater Discharge Permits are not transferable from one company or person to another. Whenever a change in ownership of a business occurs, a new permit signed by a new company official must be obtained.

Industrial Wastewater Discharge Permits for facilities that have been designated to be Significant Industrial Users (SIUs) have a duration of active approval that does not exceed five (5) years. Each permit for an SIU will have a statement of duration or a specific date of expiration associated with the approval and issuance. In accordance with Federal regulations, the duration may not exceed five (5) years. A permit review/renewal process will be initiated approximately six (6) months prior to the expiration date to allow the permittee to prepare a formal permit application if necessary.

Specific step-by-step instructions for obtaining an Industrial Wastewater Discharge Permit are included in [Section 3](#) and all the necessary forms are included in [Appendix 6.1](#).

1.3 [Surcharge Program](#)

State and Federal programs require that industrial companies discharging to publicly owned sewerage systems must pay their fair share of wastewater treatment costs. The [Wastewater Ordinance](#) provides a method whereby industrial companies calculate, based upon their own measurements, annual wastewater surcharge payments. Surcharge rates are determined for each fiscal year based upon the Districts' actual treatment costs.

In general, all industrial companies having a wastewater discharge to the sewerage system of over one million gallons during a fiscal year (July 1 to June 30) must file a Sanitation Districts' Wastewater Treatment Surcharge Statement. Companies having discharged under one million gallons of wastewater to the sewer during a fiscal year are considered to have discharged an insignificant quantity of wastewater and must file an Exemption Statement. All companies discharging between one and six million gallons per year of wastewater may file either a "Short Form" or "Long Form" surcharge statement. Companies which have high strength wastewater and discharge less than six million gallons per year may be required to file a "Long Form" surcharge statement. Companies which discharge more than six million gallons annually are required to file a "Long Form" surcharge statement. Each company which occupies one parcel of land, or multiple contiguous parcels of land, must file only one Surcharge Statement or one Exemption Statement, regardless of the number of discharge outlets that the company has in such parcel(s). The total wastewater flow volume, not the individual wastewater flow volume of multiple discharge outlets, should be used as the criteria for determining the applicability of filing an Exemption Statement (for under one million gallons per year) or a "Short Form" surcharge statement (for under six million gallons per year). "Long Form" dischargers are required to prepay the estimated surcharge in quarterly payments. The Surcharge Statement is due August 15 following the end of the fiscal year for both "Long Form" and "Short Form" companies.

1.4 [Connection Fee Program](#)

As of December 15, 1981, a Districts-wide [Connection Fee Program](#) was implemented to provide funds for future capital expenditures. This program requires all new users of the sewerage system, as well as existing users who expand their wastewater discharge by more than 25 percent, to pay a connection fee to the Districts based upon the quantity and the strength of their wastewater discharge. This connection fee applies to residential, commercial, and industrial discharges. For new facilities, the connection fee is to be paid prior to the time the facility is actually connected to the sewer or, in the case of expansions for existing facilities, at the time of expansion of the wastewater discharge. The initial fee purchases a baseline capacity entitlement for the permitted industrial connection. Companies that expand their wastewater discharge, such that the capacity is 25 percent greater than the baseline capacity, will be required to pay a connection fee for the increased discharge, thereby establishing a new baseline capacity entitlement.

For users obtaining permits at industrial sites within the Districts' service area, the baseline capacity usually has been established by the previous industrial user. Baseline entitlements remain with the site regardless of change of ownership. The only exception occurs when the original owner of the entitlement relocates to another site within the service area and is allowed to apply the capacity entitlement to the new site under the relocation credit provision of the *Connection Fee Ordinance*. Therefore, a new owner may incur a connection fee for an existing facility if the baseline capacity entitlement is not sufficient for the new production or has been relocated.

1.5 [Self Monitoring Program](#)

As a condition for approval of an Industrial Wastewater Discharge Permit, an applicant may be subject to participation in the Districts' Self Monitoring Program. This Program requires a company to furnish

chemical analyses of its industrial wastewater to the Districts on a regular basis. The type and frequency of tests to be performed are determined on a case-by-case basis depending upon the quality and quantity of the industrial discharge and are included as requirements in the Permit.

2. FEDERAL, STATE AND LOCAL REGULATIONS

2.1 Federal Effluent Limitations

Since June 26, 1978, the Environmental Protection Agency (EPA) has developed regulations for pretreatment of industrial wastes discharged to publicly owned treatment works as required by the Clean Water Act. EPA has developed regulations for over twenty industrial categories which are based on the wastewater effluent quality that can be achieved using established treatment technologies. Specific regulations and effluent limitations are set for each industrial category. The following categories are currently regulated; however, the EPA may add or delete categories in the future. The Districts are required by law to administer EPA's pretreatment program. Further information regarding a specific category's regulations can be obtained by contacting the Districts' Industrial Waste Section.

EPA Categorical Companies

1. Aluminum Forming ([40 CFR 467](#)): EPA defines aluminum forming as "the deformation of aluminum or aluminum alloys into specific shapes by hot or cold working such as rolling, extrusion, forging, and drawing." Surface treatment and heat treatment of aluminum parts that are formed at the same plant site are subject to the Aluminum Forming Regulations and are not covered by the Electroplating and Metal Finishing regulations ([40 CFR 413](#) & [433](#)). Casting of aluminum that is subsequently formed at the same plant site is also subject to the Aluminum Forming Regulations. Discharge from the forming operation is not required to be subject to this regulation.
2. Battery Manufacturing ([40 CFR 461](#)): Battery manufacturing encompasses the production of modular electric power sources where all or part of the fuel is contained within the unit and electric power is generated directly from a chemical reaction rather than indirectly through a heat cycle engine.
3. Carbon Black Manufacturing ([40 CFR 458](#)): This category consists of facilities which manufacture carbon black by the furnace, thermal, channel or lamp processes. Only facilities which have been constructed or significantly modified since May 18, 1976 are regulated.
4. Centralized Waste Treatment ([40 CFR 437](#)): This category consists of facilities that receive wastes from off-site for treatment.
5. Coil Coating ([40 CFR 465](#)): EPA regulations state that "Coil coating consists of that sequence or combination of steps or operations which clean, surface or conversion coat, and apply an organic (paint) coating to a long thin strip or coil of metal."
6. Can Making ([40 CFR 465](#)): This classification is a subcategory of coil coating and has been defined to be "the process or processes used to manufacture a can from a base metal, including aluminum and steel." This category applies to seamless cans only.
7. Copper Forming ([40 CFR 468](#)): This category regulates discharges resulting from the manufacture of formed copper and copper alloy products. The forming operations covered are hot rolling, cold rolling, drawing, extrusion, and forging. Ancillary operations which include surface treatment (pickling, tumbling, burnishing, alkaline cleaning, and surface milling), heat treatment, hydrotesting, sawing, and surface coating with molten metal are

also covered by this regulation. Discharge from the forming operation is not required to be subject to this regulation.

8. Electrical and Electronic Components ([40 CFR 469](#)): This category consists of all operations associated with the manufacturing of semiconductors, electronic crystals, cathode ray tubes, and luminescent materials except for sputtering, electroplating, and vapor plating operations.
9. Electroplating ([40 CFR 413](#)): This category consists of electroplating, anodizing, conversion coating, electroless plating, chemical etching and milling, and the manufacturing of printed circuit boards. This category applies to existing job shops only.
10. Fertilizer Manufacturing ([40 CFR 418](#)): This category applies to discharges from the manufacture of sulfuric acid, nitric acid (in concentrations up to 68%), ammonium sulfate by the synthetic process or by coke oven byproduct recovery, and mixed and blend fertilizers. It is only applicable to sulfuric acid and nitric acid manufacturing processes that have been constructed or significantly modified since December 7, 1973 and ammonium sulfate and mixed and blend fertilizer manufacturing processes that have been constructed or significantly modified since October 7, 1974.
11. Glass Manufacturing ([40 CFR 426](#)): This category consists of manufacturers of glass containers, television picture tubes, incandescent lamp envelopes, and hand pressed and blown glass. Only facilities which have been constructed or significantly modified since August 21, 1974 are regulated.
12. Ink Formulating ([40 CFR 447](#)): This category applies to discharges resulting from the formulation of oil-base ink where the tank washing system uses solvents. It is only applicable to processes that have been constructed or significantly modified since February 26, 1975.
13. Inorganic Chemicals Manufacturing ([40 CFR 415](#)): This category includes facilities involved in the manufacture of basic inorganic chemicals including alkalies and chlorine, industrial gases, and inorganic pigments.
14. Iron and Steel ([40 CFR 420](#)): This category covers steel works, blast furnaces (including coke ovens), rolling mills, electrometallurgical products, steel wire drawing and facilities which produce steel nails and spikes, and steel pipes and tubes. This category does not include coil coating operations.
15. Leather Tanning and Finishing ([40 CFR 425](#)): This category consists of the tanning, currying, and finishing of hides and skins into leather.
16. Metal Finishing ([40 CFR 433](#)): This category consists of electroplating, anodizing, conversion coating, electroless plating, chemical etching and milling, and the manufacturing of printed circuit boards. This category applies to captive shops (owns 50 percent or more of the surface area finished), and all new source electroplating and metal finishing operations (those which began construction after August 31, 1982).
17. Metal Molding and Casting ([40 CFR 464](#)): This category consists of the pouring or injection of molten metal into a mold with the cavity of the mold representing, within close tolerances, the dimensions of the final product. This category includes aluminum, copper, ferrous, and zinc casting.

18. Nonferrous Metals Manufacturing ([40 CFR 421](#)): This category consists of plants that process nonferrous ore concentrates (primary) and scrap metals (secondary) to recover and increase the metal purity contained in these materials.
19. Nonferrous Metals Forming ([40 CFR 471](#)): This category consists of the deformation of a metal (other than iron) or metal alloy (other than iron as the major component by weight) into specific shapes by hot or cold working, drawing, cladding and tube reducing.
20. Organic Chemicals, Plastics, and Synthetic Fibers ([40 CFR 414](#)): This category consists of facilities which manufacture organic chemicals, plastics, or synthetic fibers. Companies which simply formulate or package these materials are excluded.
21. Paint Formulating ([40 CFR 446](#)): This category applies to discharges resulting from the formulation of oil-base paint where the tank cleaning is performed using solvents. It is only applicable to processes that have been constructed or significantly modified since February 26, 1975.
22. Paving and Roofing Materials ([40 CFR 443](#)): This category consists of producers of asphalt paving and roofing emulsions, asphalt concrete, asphalt roofing materials, and linoleum and asphalt felt floor coverings. It is only applicable to facilities that have been constructed or significantly modified since January 10, 1975.
23. Pesticide Chemicals ([40 CFR 455](#)): This category includes the manufacturing, formulating, packaging, and repackaging of pesticides.
24. Petroleum Refining ([40 CFR 419](#)): This category includes operations which produce gasoline, kerosene, distillate fuel oils, residual fuel oils and lubricants, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes.
25. Pharmaceutical Manufacturing ([40 CFR 439](#)): This category includes pharmaceutical manufacturing facilities which may use fermentation, extraction, chemical synthesis, mixing/compounding and formulation, or may conduct research.
26. Porcelain Enameling ([40 CFR 466](#)): EPA defines porcelain enameling as "that sequence or combination of steps or operations which prepare the metal surface and apply a porcelain or fused silicate coating to the metal basis material."
27. Pulp, Paper, and Paperboard and the Builders' Paper and Board Mills ([40 CFR 430](#) and [40 CFR 431](#)): This category includes pulp mills, paper mills, paperboard mills, and building paper and building board mills.
28. Rubber Manufacturing ([40 CFR 428](#)): This category consists of manufacturers that reclaim rubber or mold, extrude, or fabricate rubber products, including latex products. It is only applicable to facilities that have been constructed or significantly modified since August 23, 1974.
29. Soap and Detergent Manufacturing ([40 CFR 417](#)): This category consists of facilities which blend or package liquid detergents or manufacture dry detergents by spray drying, drum drying, or dry blending. Only facilities which have been constructed or significantly modified since December 26, 1973 are regulated.
30. Steam Electric Power Generation ([40 CFR 423](#)): This category is composed of facilities that are engaged in the generation of electricity for distribution and sale, and use either fossil-

type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle that has a steam/water thermodynamic medium.

- 31. Textile Mills ([40 CFR 410](#)): This category applies to the fiber preparation and manufacturing/processing parts of the textile industry.
- 32. Timber Products ([40 CFR 429](#)): This category consists of a diverse group of manufacturing plants whose primary raw material is wood and whose products range from finished products to hardboard and preserved wood.

2.2 Districts' Effluent Limitations

In addition to implementation of EPA limits, the Districts also enforce a set of local limits (Phase 1) and Ordinance requirements for all companies discharging to the Districts' sewerage system. These limits are applicable to all wastewater dischargers and may not be exceeded at any time. Stricter limits may be applied for any of the Phase I parameters or additional limits may be set on a case-by-case basis to protect the public or the Districts' sewerage facilities. Examples of additional constituents which may be limited include, but are not restricted to, total dissolved solids (TDS), high pH, thiosulfate, ammonia, benzene, mercaptans, fluoride, surfactants, toxic organics, and oil and grease. Local limits are reviewed on an ongoing basis to determine if revisions are necessary to meet Local, State and Federal regulations. In addition, the [Wastewater Ordinance \(Section 406\)](#) contains a comprehensive list of prohibited wastes which must not be discharged to the Districts' sewerage facilities in any amount. Examples include, but are not limited to, flammable, corrosive, odorous, highly colored, foam-generating, and highly concentrated solid materials.

Sanitation Districts' Phase 1 Limits

<u>Parameter</u>	<u>Maximum Allowable Concentration at any time, mg/l</u>
Cyanide (Total)	10
Arsenic	3
Cadmium	15
Chromium (Total)	10
Copper	15
Lead	40
Mercury	2
Nickel	12
Silver	5
Zinc	25
*TICH	Essentially None

*Total Identifiable Chlorinated Hydrocarbons include such pesticides as aldrin, dieldrin, chlordane, DDT, endrin, hexachlorocyclohexane, toxaphene and PCBs.

Numerical Requirements Listed in the Districts' Wastewater Ordinance

- 1. The pH of the wastewater discharged shall not be below 6.0 at any time.
- 2. The dissolved sulfide concentration of the wastewater shall not exceed 0.1 mg/l at any time.
- 3. The temperature of the wastewater shall not exceed 140⁰ F at any time, and shall not cause the wastewater influent to a Districts' treatment plant to exceed 104⁰ F.

2.3 Hazardous Materials and Hazardous Wastes Management Requirements

If your facility handles hazardous materials, you may be subjected to Local, State and Federal reporting requirements for hazardous material storage, emergency response, community right-to-know and routine release to the three media of the environment, including sewer discharge. For further

information, please contact your local Administrative Agency, which is usually the hazardous materials section of your local fire department.

If your facility generates, stores, treats or disposes of hazardous wastes, you may be subjected to various Local, State and Federal requirements for the control of hazardous wastes. For more information, please call the [Los Angeles County Fire Department Health and Hazardous Materials Division](#) 323-890-4045. (For facilities in Long Beach, Pasadena and Vernon, please call the hazardous waste section of your local health department.)

Some of the hazardous waste control requirements are as follows:

- If you are a major generator of hazardous wastes, you may need to obtain a U.S. EPA Identification number by filing a Notification Form of Hazardous Waste Activity. For a copy of the form, please call the State [Department of Toxic Substances Control](#) at 916-324-1781. As a generator, you may also be subjected to the requirement for reducing your generation of hazardous wastes under the Hazardous Waste Source Reduction and Management Review Act (SB 14, Roberti). For further information, please contact the regional offices of the [Department of Toxic Substances Control](#) at 818-551-2800 (Glendale) or 714-484-5300 (Cypress) and ask for the duty officer.

If you treat any hazardous wastes, including hazardous wastewater in your industrial wastewater pretreatment system for discharge to the sewer system, you may be required to obtain a Treatment, Storage or Disposal Facility permit from the State [Department of Toxic Substances Control](#). However, there is a simplified procedure called the Permit-By-Rule program, in which you are deemed to have a permit after you have filed a notification form and fulfilled certain standard requirements. For further information, please call the regional offices of the [Department of Toxic Substances Control](#) listed above.

- If your wastewater discharge to the sewer can be considered as hazardous waste under federal regulations, you may be required to notify the Districts of this discharge of hazardous waste to the sewer. You can request the Notification Report of the Discharge of Hazardous Wastes form by calling the Districts' Industrial Waste Section at 562-699-7411 x2900. (This federal requirement is to help inform a sewer agency that hazardous wastes are being discharged to its system and let the individual sewer agency decide if these hazardous waste discharges need be regulated. Federal regulations presently exclude industrial wastewater discharges to a sewer agency for combined domestic and industrial wastewater treatment from being defined as hazardous waste. Please note that this exclusion applies only to the actual wastewater discharge. It does not exclude industrial wastewater from being considered hazardous waste while it is being collected, stored or treated before discharge to the sewer, nor does it exclude sludge that is generated by industrial wastewater treatment.)

2.4 Waste Minimization

The Districts are requiring a waste minimization plan to be submitted with every new permit or permit revision (see [Section 3.3](#)). Conventional waste management activities for industrial users have largely focused on treatment, control and disposal, and to a lesser extent on recycling. EPA and other regulatory agencies have started to reevaluate these activities with the consensus that end-of-pipe pollution controls are not enough. This shift in emphasis is the direct result of the continued release of significant amounts of wastes containing toxic constituents to the air, land and water despite stricter pollution controls and skyrocketing waste management costs. Because of the increasing evidence of the environmental and economic benefits associated with reducing waste at the source rather than managing such waste after it is produced, programs related to waste reduction are underway at the Local, State and Federal levels. Economic benefits realized from source reduction include cost savings from pollution control facilities that do not have to be built, reduced operating costs for pollution control facilities, and reduced manufacturing costs and retained sales of products that might otherwise have

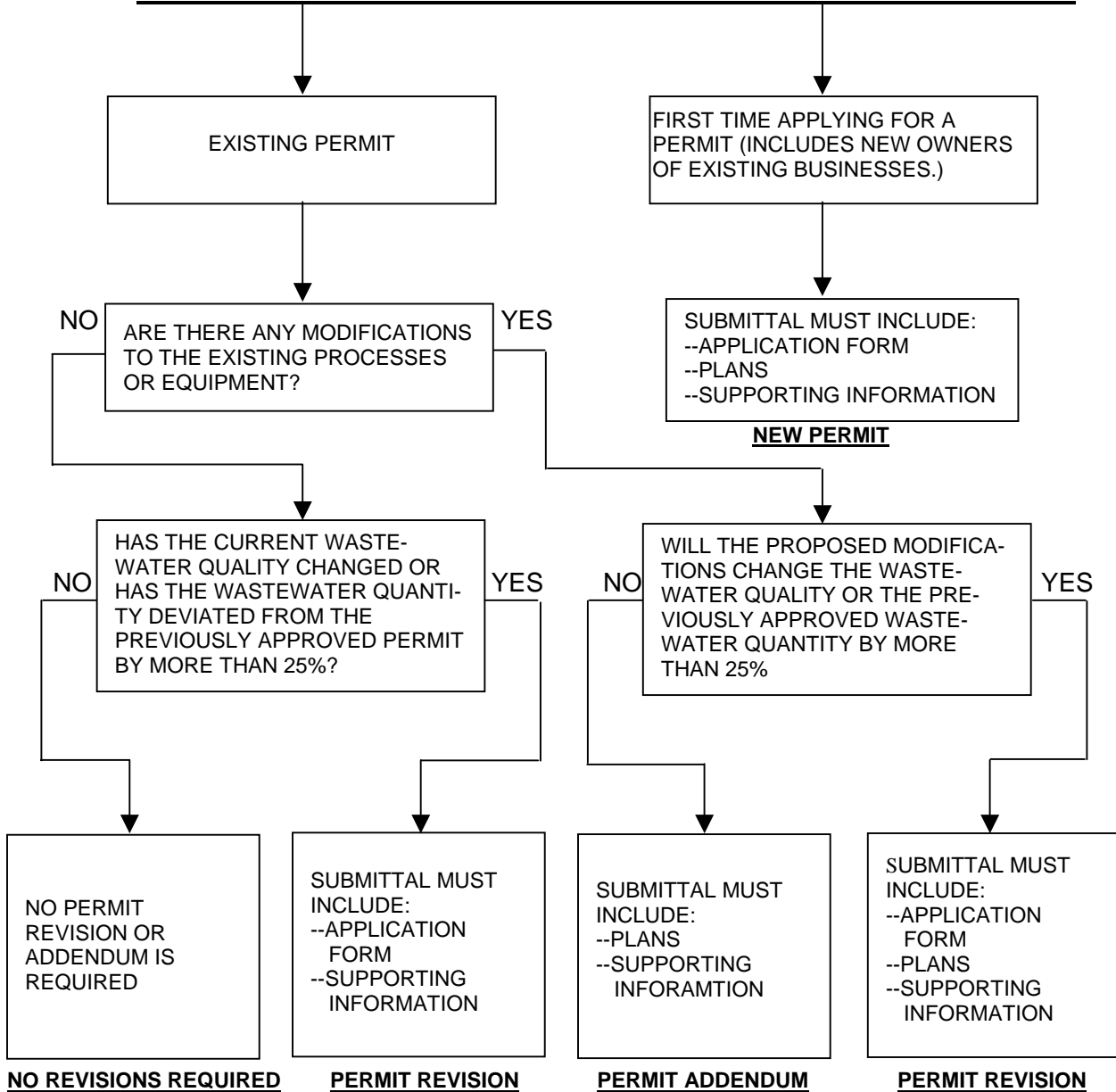
been taken off the market as environmentally unacceptable. Industrial source reduction can be accomplished through input substitution, product reformulation, process modification, improved housekeeping, and on-site, closed-loop recycling. Additional information regarding waste minimization programs and available source reduction methods can be obtained by contacting the Districts' Industrial Waste Section at (562) 6999-7411, extension 2900.

3. INSTRUCTIONS FOR APPLYING FOR AN INDUSTRIAL WASTEWATER DISCHARGE PERMIT

In order for the Districts to properly evaluate and process an Industrial Wastewater Discharge Permit, it is essential that the applicant provide a complete and adequate permit submittal. The instructions that follow provide a list of the items that must be included in the submittal as well as a summary of current guidelines and policies that must be taken into consideration when preparing the submittal. **The complete permit submittal must then be sent to the local agency** (the local city or the [Los Angeles County Department of Public Works](#)) for initial processing prior to Districts' review. Contact the applicable local agency for the appropriate permit processing fee that may be required. A listing of the local agencies is presented in [Table 1](#), and their addresses are shown in [Appendix 6.4](#). County contract cities are those cities which contract with the [Los Angeles County Department of Public Works](#) for sewerage services. Companies located within the contract cities or unincorporated areas of the County should send permit submittals to the Los Angeles County Department of Public Works.

The permit submittal can be conceived as being composed of three main parts: 1) [Permit Application Form](#), 2) [Plans](#), and 3) [Supporting Information](#).

TYPES OF INDUSTRIAL WASTEWATER DISCHARGE PERMIT SUBMITTALS



*NOTE: A NEW PERMIT IS REQUIRED FOR A CHANGE IN OWNERSHIP. HOWEVER, PLANS MAY NOT BE REQUIRED IF ALREADY ON FILE AND STILL ACCURATE.

3.1 [Permit Application Form](#)

All first-time applicants must submit a completed [permit application form](#). A company with an existing permit that is proposing modifications which will change the previously approved wastewater discharge by more than 25 percent will be required to apply for a permit revision. A permit revision request must also include a completed permit application form. Proposed modifications which will not change the wastewater quality or the previously approved wastewater quantity by more than 25 percent will be processed as an addendum to the existing permit and will not require a permit application form.

The [permit application form](#) can be found in [Appendix 6.1](#) and line-by-line instructions are presented on Pages 11, 12 and 13.

Line-by-Line Instructions for Completing the [Permit Application](#)

Line 1: Sewer Connection Category

Check the appropriate category. Please indicate whether the proposed discharge is to an existing public sewer connection or if a new industrial wastewater connection is required.

Line 2: Company Name

The legal name of the company responsible for the wastewater to be discharged must be indicated on line 2. The contractor, plumber, or consultant must not be listed.

Line 3: Type of Business Entity

On line 3 the appropriate box indicating the type of business entity must be checked. If the applicant is a corporation, the legal name of the corporation, year of incorporation, state of incorporation, and the corporate state identification number must be listed. If the applicant is a partnership, indicate the name of the partnership and list the names of the individual partners. If the applicant is a sole proprietor, indicate the name of the sole proprietor and also list the names of all the businesses which the sole proprietor operates.

Lines 4 to 6: Company Address and Point of Discharge

Provide the situs address of the wastewater-producing facility on line 4. The mailing address of the applicant should be provided on line 5. On line 6, specify the point of connection to the public sewer by using the sewer station number, distance from nearest street intersection, or any other means of identification.

Line 7: Length of Occupancy

Indicate the number of years the applicant has been in business at the location indicated on line 4. If the applicant has yet to occupy the facility, please indicate this and continue on to line 8.

Line 8: Property Owner

On line 8 indicate the name of the property owner of the location indicated on line 4. Also list the address and phone number where the property owner can be contacted.

Line 9: Assessors Map Book, Page, and Parcel Number

This number is the property identification number of the facility producing the wastewater. The property identification number is the same as that used by the County Tax Assessor and should be identical to that shown on the annual property tax bill. These identification numbers consist of a four-digit number followed by two three-digit numbers (for example, 8115-004-906). For additional help see the Assessors' website at <http://assessormap.co.la.ca.us>.

Line 10: Type of Industry

Give a general description of the type of business the applicant operates. The Federal Standard Industrial Classification (SIC) Number(s) must be provided. This number is obtained from the Federal Standard Industrial Classification Manual, which may be found in the offices of your local city, Los Angeles County Department of Public Works, at the Districts' office or by assessing the website at <http://www.osha.gov/pls/imis/sicsearch.html>.

Line 11: Number of Employees

Indicate the total number of full-time and part-time employees.

Lines 12 to 14: Description of Operation

Provide a brief description of the types and quantities of the major raw materials used at the facility and of the products produced on lines 12 and 13. On line 14 give a full and detailed description of all the operations that take place at the facility (especially those that generate the wastewater to be discharged). A more complete and comprehensive description of the raw materials, produced products, and process operations may need to be submitted as additional information in an accompanying letter.

Line 15: Time and Days of Discharge and Number of Shifts Per Day

Indicate the appropriate time, shifts and days of the proposed wastewater discharge. If the time and days of wastewater discharge do not coincide with the working hours, this must be discussed in an accompanying letter.

Line 16: Wastewater Flow Rate

Provide the average industrial wastewater flow rate in gallons per day. For existing facilities, please provide copies of the most recent twelve (12) months of water bills for the facility and complete [Form B](#) in [Appendix 6.1](#). The water bills will be used to verify the reported flow rate. Companies that have an approved effluent wastewater flow measurement system must provide totalizer readings for the last twelve (12) months and must indicate the totalizer units (e.g., hundreds of gallons). The peak flow rate (in gallons per minute) must also be provided on line 16. This is the rate at which wastewater is discharged to the public sewer during the single highest 5-minute discharge period. Estimates will be acceptable for new facilities only.

Line 17: Constituents of Wastewater Discharge

Give a general description of the materials or chemicals which may be present in the industrial wastewater discharge. For existing facilities, chemical analyses of the wastewater by a State certified or Districts-approved laboratory must be furnished. Such analyses must include values for COD (chemical oxygen demand), SS (suspended solids), pH, and any other chemicals associated with the raw materials used at the facility. New companies which are not yet generating wastewater must submit estimates for these parameters.

Line 18: Industrial Wastewater Contact

Print the name, position, and telephone number of a company official who has working knowledge of the operations producing the wastewater, is responsible for the industrial wastewater discharge, and may be contacted for further information. If someone other than the individual listed on line 18 is to be the contact person for permit processing purposes, such as a contractor, plumber or consultant, the permit processing contact person should be specified in an accompanying letter.

Line 19: Signature

This permit application form must be signed and dated by a company administrative officer such as the president or vice president of the company. The signature of a contractor, plumber, or consultant will not be acceptable.

Lines 20 and 21: Approval Signatures

The local sewerage agency (the local city or the [Los Angeles County Department of Public Works](#)) must sign and date the permit application before review and approval by the Districts. The signatures of both the local agency and the Districts are required to establish a valid Industrial Wastewater Discharge Permit.

3.2 Plans

All companies applying for an industrial wastewater discharge permit or amending a current permit must submit adequate plans. An exemption from submitting plans may be allowed if the facility has previously had an Industrial Wastewater Discharge Permit and there are adequate and valid plans on file with the Districts. **This can only be allowed if there have been no changes in the facility, process or pretreatment equipment from that depicted on the previously approved plans.**

The plans submitted must have sufficient quality to reproduce clearly. All drawings submitted must have good contrast, clear background and legible labeling. Moreover, the drawings shall have minimum dimensions of 11 inches by 17 inches and maximum dimensions of 30 inches by 42 inches.

The number of sets of plans to be submitted depends on the city where the company is located, as shown in Table 1.

TABLE 1 – Number of Sets of Plans Required

Non-Contract Cities (4 sets of plans unless specified otherwise)

Alhambra	Lynwood
Arcadia	Manhattan Beach
Azusa	Maywood
Baldwin Park	Monrovia
Bell	Montebello
Beverly Hills	Palos Verdes Estates
Bradbury	Pasadena
Claremont	Pomona (5 sets)
Compton	Redondo Beach
Covina	Rolling Hills
Downey	San Gabriel
El Monte	San Marino
El Segundo	Santa Fe Springs (5 sets)
Glendora	Sierra Madre
Hawthorne	Signal Hill (5 sets)
Hermosa Beach	South El Monte
Huntington Park	South Gate
Industry (5 sets)	South Pasadena
Inglewood	Torrance
Lancaster	Vernon
Long Beach	West Covina
Los Angeles	Whittier

County Contract Cities (6 sets of plans required unless specified otherwise)

Artesia	La Verne
Bellflower	Lawndale
Bell Gardens	Lomita
Carson	Monterey Park
Cerritos	Norwalk
Commerce	Palmdale
Cudahy	Paramount
Culver City (7 sets)	Pico Rivera
Diamond Bar	Rancho Palos Verdes
Duarte	Rolling Hills Estates
Gardena	Rosemead
Hawaiian Gardens	San Dimas
Irwindale	Santa Clarita
Lakewood	Temple City
La Mirada	Walnut
La Puente	West Hollywood (7 sets)

Unincorporated County Areas (6 sets of plans required)

Inland Empire Utilities Agency (5 sets of plans required)

A. Required Plans

For companies required to submit plans, the following should be provided:

1. Sewerage Plan

The applicant must provide a wastewater sewerage plan, drawn to scale, that shows sewers and associated facilities for the handling of industrial wastewater from the point of origin to the connection to the public sewer. All processes generating wastewater must be identified and all sewers, floor drains, trenches and sinks must be indicated on the plan. The sewerage plan must also show sanitary lines from restrooms, drinking fountains and other nonindustrial wastewater sources. Finally, the plans must show the location and number of incoming water meters in the facility. It is a Districts' requirement that all sanitary lines at a facility must be kept separate from industrial process flows until after the industrial wastewater has passed through all pretreatment facilities, monitoring devices and flow measuring systems. An example of a sewerage plan is presented below in Figure 1.

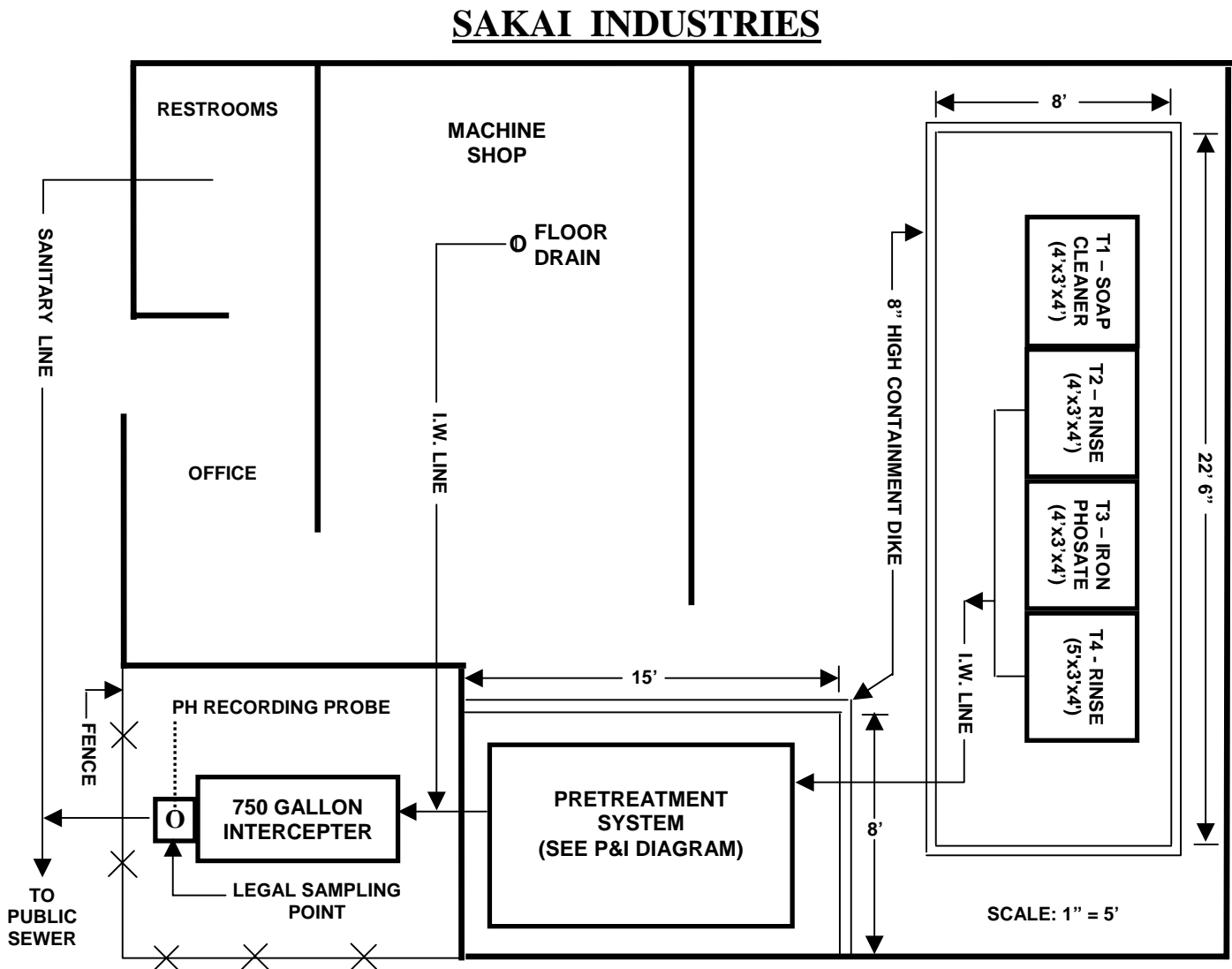
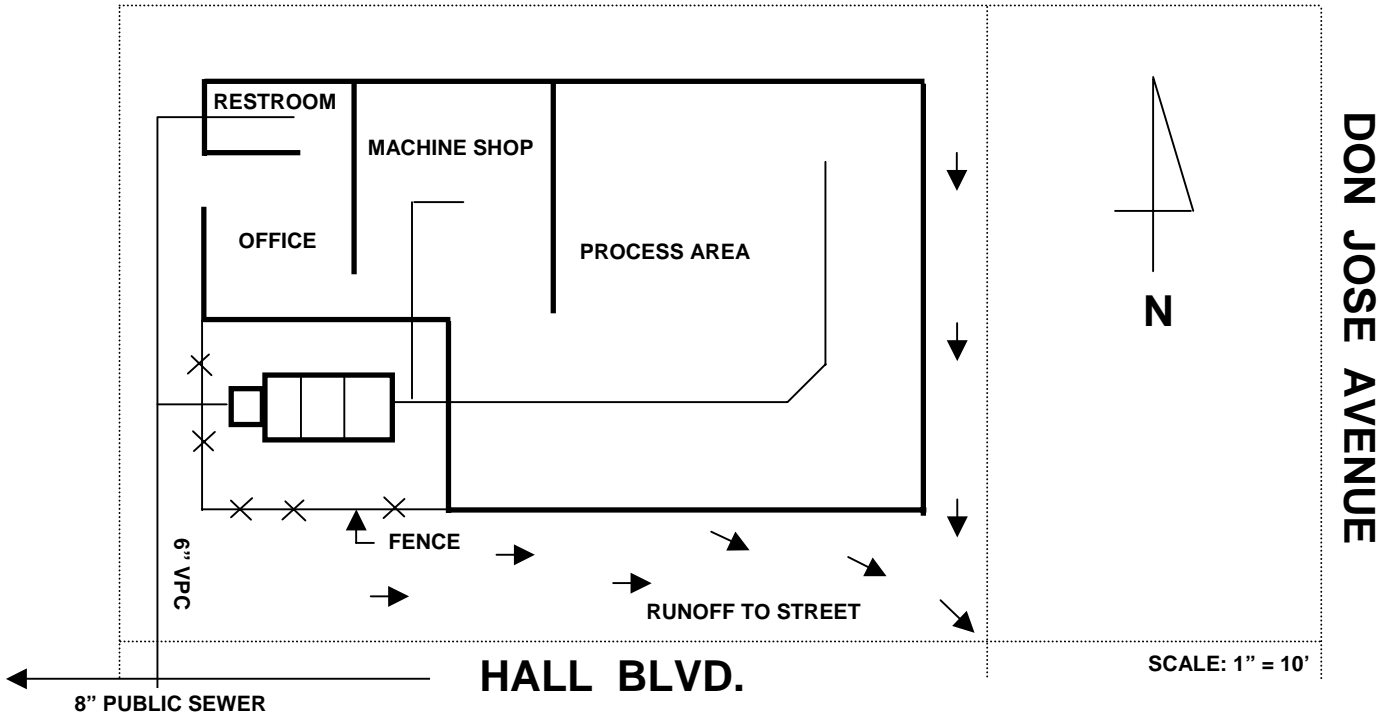


FIGURE 1: SAMPLE SEWERAGE PLAN

2. Plot Plan

A plot plan of company property, drawn to scale, showing adjacent named streets and a properly oriented north arrow must be provided. The method of disposal of rainwater runoff should be stated and shown in the plan. Grading, drainage or direction of storm runoff must be shown. Plant sewer lines and the connection to the public sewer should also be included. A sample plot plan is shown below in Figure 2.



**SAKAI INDUSTRIES
123 HALL BLVD.
PLAYA LINDA, CA 90000**

FIGURE 2: SAMPLE PLOT PLAN

3. Plans of Pretreatment and Monitoring Facilities.

Detailed plans of all wastewater pretreatment and monitoring facilities must be furnished. These should include plan and section views of the pretreatment system, design data, catalog cuts, and sizes of tanks, reactors and other equipment involved. A flow schematic must also be submitted for pretreatment systems with more than one unit process. A sample pretreatment system diagram is shown below in Figure 3.

The Districts require pretreatment systems to be designed to consistently remove the types of pollutants generated by the company's wastewater-producing operations to levels which meet any applicable Federal or Local limitations. For most industrial facilities, the minimum required pretreatment consists of a three-compartment, gravity separation interceptor (clarifier) and a sampling box. The interceptor must provide at least 30 minutes of detention time based on the

peak wastewater discharge rate and have a minimum capacity of 500 gallons. It must be properly baffled to prevent sand, grit, oil and grease from entering the sewer. The sampling box must be suitable for obtaining grab or continuous wastewater samples. It must be located downstream of all sources of industrial wastewater and of any pretreatment equipment, and must not collect any sanitary wastes. In addition, the sampling box must be located in a secure area of the facility, away from traffic and production activity. Finally, each permitted industrial sewer outfall may only have one sampling box, except as required by federal regulations. Both the interceptor and the sampling box must be constructed with a structurally sound material. It is the permittee's responsibility to adopt the proper precautions (e.g., double containment, coating, etc.) to prevent the contamination of the surrounding soil or groundwater. Copies of the County Engineer Standards for interceptor and sampling box are shown in [Appendix 6.2](#) and [Appendix 6.3](#).

Additional required pretreatment facilities may include pH neutralization, clarification, flocculation, dewatering, or other more extensive facilities. Any pretreatment systems judged by the Districts to require engineering design shall have plans prepared, stamped and signed by an engineer of suitable discipline registered in the State of California.

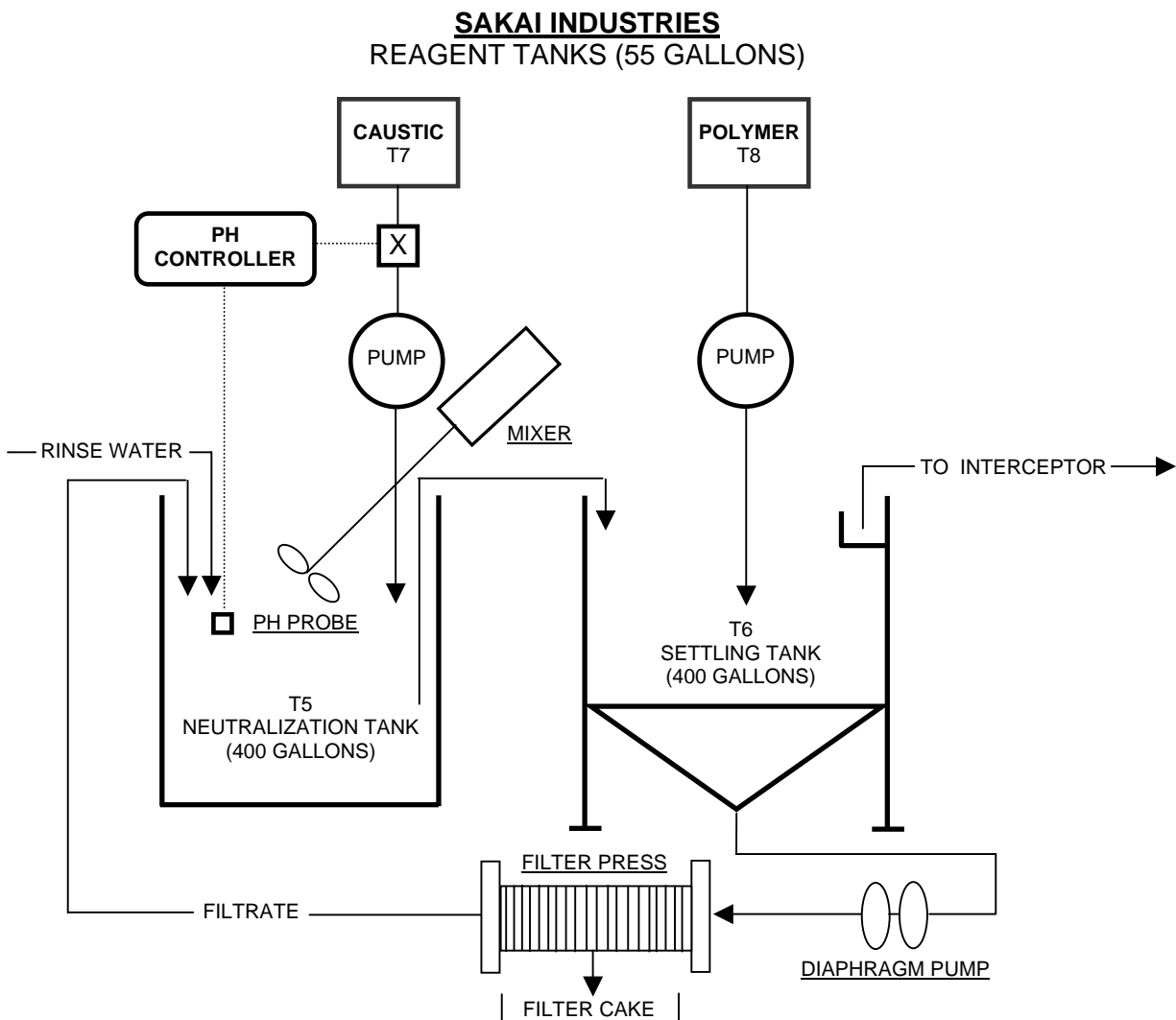


FIGURE 3: SAMPLE PRETREATMENT SYSTEM P&I DIAGRAM

B. Additional Plans

Whenever applicable, additional plans must be provided according to the following specific policies and guidelines:

1. Spill Containment Systems.

Companies that store or use cyanide, heavy metals, acids, toxic organics and/or flammable substances may be required to install spill containment systems as required in the Districts' Slug Discharge and Spill Containment Policy. Such dischargers must provide spill containment systems for all applicable tanks to prevent toxic materials from entering the sewer. The applicant must submit plans and calculations (refer to Form C in Appendix 6.1) that indicate the means of preventing the discharge of toxic materials to the sewer in the event of failure, leakage or accidental overflow of storage or treatment tanks or process equipment. The plans must show plan and elevation views of the spill containment system specifying the dimensions and height of all diking, the volume and contents of the tanks enclosed, and the location of all floor drains, wastewater piping, interceptors or any other wastewater pretreatment facilities. Diked volume must exceed the volume of the largest enclosed tank plus six inches of rainfall (if the area is outdoors). Contact the Districts' Industrial Waste Section at (562) 699-7411, extension 2900 for the complete Spill Containment Policy or access it from the Districts' website at <http://www.lacsd.org/iw/spill.htm>.

2. Flow Measurement Systems.

The Districts require companies having a total discharge of 50,000 gallons or more per day or a peak flow over 100 gallons per minute to install, calibrate and maintain flow measurement systems that are capable of continuously recording effluent flow rates. Companies that have unmetered sources of water supply, excessive/undocumented non-sewered losses, or highly fluctuating wastewater discharge flows may also be required to install flow measurement systems.

The flow measurement system should be an open-channel design (e.g. flume, weir, etc.). Closed-pipe flow measurement systems (e.g. turbine, magnetic, etc.) will only be accepted if an open-channel flow measurement system is physically impractical to install and if an open-channel primary element, or another primary element accepted by the Districts, is also installed as a back-up device.

The flow measurement system may also serve as a suitable wastewater sampling point provided it is located downstream from all pretreatment operations. The system should be installed in a secure area of the facility away from traffic and production activity, and as close as possible to the public sewer.

Plans for flow measurement systems are required to be prepared and signed by an engineer of suitable discipline licensed by the State of California. Contact the Districts' Industrial Waste Section at (562) 699-7411, extension 2900 for a complete Flow Monitoring Requirement Policy or access it from the Districts' website at <http://www.lacsd.org/iw/flow.htm>.

3. Rainwater Management.

Discharge of rainwater to the Districts' sewerage system is prohibited without prior approval. The Districts require that all processing areas be properly roofed and graded to prevent any storm runoff from entering into the public sewer. The Districts may accept the installation of automatic rainwater diversion systems in situations where the company proves that it is

unfeasible to roof or completely segregate from the sewerage system an area exposed to rainwater intrusion. The applicant must provide a detailed grading plan that shows the direction of storm runoff and the system that will divert rainwater from the sewerage system after 0.1 inch of rainfall. Plan and section views must indicate the specifications of the rainwater diversion device, and of the pumps, sumps and piping involved in diverting rainwater away from the sewerage system. (Full instructions regarding the discharge of rainwater to the sewerage system can be found in the Districts' Guidelines for the Discharge of Rainwater, Stormwater, Groundwater, and other Water Discharges). Contact the Districts' Industrial Waste Section at (562) 699-7411, extension 2900 for a complete Rainwater Policy or access it from the Districts' website at <http://www.lacsd.org/iw/Rain.htm>.

4. Combustible Gas Monitoring Systems.

Industries which are considered to be significant potential dischargers of flammable substances are required to install, operate and maintain an adequate combustible gas monitoring system. This requirement applies to:

- a. All petroleum refineries;
- b. Gasoline storage/transfer facilities, chemical manufacturing plants, and oil and gas extraction facilities having industrial wastewater discharges of 25,000 gallons or more on any one day; and
- c. Any other facility that, upon evaluation with respect to wastewater-producing operations, discharge flow volume, type and quantity of materials being used, stored, or produced, is determined to be a potential discharger of flammable substances.

These industries must submit drawings of the combustible gas monitoring system for the Districts' review prior to installation. The drawings shall show locations, dimensions and specifications of the detector/sensor head assembly and control unit, details of both the upstream and downstream piping, the means of diverting the flow to an appropriate storage facility, and the capacity of the storage system. Manufacturer's catalog cuts, specifications and data sheets shall also be included with the required drawings. Complete information regarding combustible gas monitoring systems is found in the Districts' Combustible Gas Monitoring System Guidelines. Contact the Districts' Industrial Waste Section at (562) 699-7411, extension 2900 or access it from the Districts' website at <http://www.lacsd.org/iw/combustg.htm>.

3.3 Supporting Information

In order to facilitate the permit review process, the applicant must furnish additional information to supplement the application and plans submitted. **As a minimum, all submittals must include items A through D (as described below)**. It is the applicant's responsibility to determine what other supporting information must be provided (refer to items E through N).

A. Applicant's Questionnaire (Form A)

All submittals must include the questionnaire in Appendix 6.1 (**Form A**). This questionnaire requests specific information that will be essential in the evaluation of the submittal. The questionnaire will also aid the applicant in determining all the supporting information that needs to be included with the submittal.

B. Estimation of Industrial Wastewater Discharge Flow (Form B)

The industrial wastewater discharge flow rate listed on the permit application must be estimated as accurately as possible. All existing companies must complete and submit the "Calculation of Industrial

Wastewater Discharge Flow Rate Form" ([Form B](#)) in [Appendix 6.1](#). Companies not yet in operation must submit supporting information that justifies the industrial wastewater discharge flow rate listed on the permit application. Companies with a Districts' approved effluent wastewater flow measurement system must provide totalizer readings for the last twelve (12) months.

C. Tank Schedule and Spill Containment Calculations ([Form C](#))

The applicant must complete and submit the tank schedule form in Appendix 6.1 ([Form C](#)) to describe the contents, dimensions and specifications of all tanks used in the process and pretreatment areas. Each tank must be numbered to correspond with the tanks shown on the plans. The applicant must also include detailed calculations that indicate that adequate spill containment is provided for those tanks that contain liquid solutions of acids, cyanide, heavy metals, and other restricted materials. The containment system must have enough capacity to contain the largest tank plus six (6) inches of rain (in the event that the containment system is located outdoors). Finally, the spill containment system must not have valves, gates or openings of any kind.

D. Check List ([Form D](#))

The applicant must complete and submit the check list ([Form D](#)) in [Appendix 6.1](#). The check list will help both the applicant and the Districts determine the completeness of the Industrial Wastewater Discharge Permit submittal.

E. Waste Minimization Plan

1. Any permittee required to prepare a Source Reduction Plan (Plan) and Hazardous Waste Source Reduction and Management Report (Report) under the Hazardous Waste Source Reduction and Management Review Act of 1989 (SB 14), [[Article 11.9 of Chapter 6.5 of Division 20 of the Health and Safety Code, commencing with section 25244.12](#)]. Title 22, Chapter 30, Article 6.1 of the [[California Code of Regulations](#)] is required to submit the Plan and Report and corresponding Summaries to the Districts with its permit submittal.
2. Any permittee who must notify the Districts of any sewer discharge of substances designated as hazardous waste according to [Title 40, Code of Federal Regulations, Part 261](#) (see [Item N](#) of this section). The notification includes a certification that the company has a waste minimization program in place. A written narrative of the program currently in place at the facility must be submitted with the permit package. The program must include at a minimum a description of the processes at the facility which generate waste, the types of wastes generated, and the source reductions implemented for these waste streams. If the permittee is already submitting an SB 14 report, this would suffice for waste minimization plan discussed here. Notification, however, will still be required.
3. If the permittee is not subject to either of the above requirements, the attached Applicant Questionnaire must still be completed and submitted with the permit application.

F. Process Description

A detailed description of all manufacturing and pretreatment operations must be provided to sustain the information listed on the permit application. This description should specify the types and quantities of raw materials used in each operation as well as the sequence of steps followed during wastewater producing and pretreatment operations.

G. Material Safety Data Sheets

Material safety data sheets must be provided for all chemicals used in the facility, especially those chemicals that may contaminate directly or indirectly the wastewater stream.

H. Wastewater Analysis

Existing facilities must submit a minimum of two (2) wastewater analyses with the permit submittal. The analyses should include conventional pollutants such as chemical oxygen demand, suspended solids, total dissolved solids, pH, and toxic pollutants that may be present in the wastewater (e.g. heavy metals and organics). Chemical oxygen demand, suspended and dissolved solids, and heavy metals must be analyzed using 24-hour time composite or flow composite samples, while cyanide, sulfides, oil and grease, and organic pollutants must be analyzed using grab samples. Estimated concentrations will only be allowed for those companies not yet in operation.

I. Baseline Monitoring Report

All companies believed to be subject to EPA industrial categorical regulations are required to submit a Baseline Monitoring Report (BMR) for every industrial waste discharge connection to the public sewer. The purpose of the BMR is to indicate a company's compliance status with respect to EPA's regulatory requirements. The BMR must be completed and included in the permit submittal. Existing facilities required to supply wastewater analyses as part of the BMR submittal must submit one representative sample analysis of the wastewater effluent for all the parameters regulated by the category. Representative samples are 24-hour composite samples. For unstable parameters such as pH, cyanide, oil and grease, volatile organics, phenols, and sulfides, a minimum of four grab samples must be collected over a 24-hour period. The average of the grab sample analyses is considered representative. The applicant must also submit at least one 24-hour flow-composite or time-composite analysis for all other regulated pollutants. The applicant should refer to [Section 2.1](#) to check whether or not the company falls under any of the categories set by the EPA. The applicant can obtain additional information and BMR forms by calling the District's Industrial Waste Section at (562) 699-7411, extension 2900.

J. Pump Curves

The applicant must provide characteristic rating curves for all pumps conveying wastewater in the facility.

K. Catalog Cuts

Manufacturer's data and brochures of specific pretreatment units, flow measurement systems, pumps and other equipment must be furnished.

L. Baseline Credit Information

The Districts' [Connection Fee Ordinances](#) were developed to recover the costs of constructing new capital facilities needed to accommodate the added burden of new and expanded wastewater dischargers on the various sewer systems. As part of this program, capacity unit entitlements have been established to quantify such added wastewater burdens.

The Industrial Wastewater Discharge Permit approval process evaluates the demand the company's wastewater places on the Districts' sewer system for the facility in question (refer to [Section 1.4](#) and [Section 4.2B](#)). A connection fee is due if the company's wastewater discharge exceeds their baseline credit at the site by more than 25 percent. The baseline credit is usually established from a previous industrial wastewater discharger at the site. However, companies that occupy a facility with no previous industrial wastewater discharge may still be entitled to receive a baseline credit. Industrial wastewater dischargers in existence prior to June 30, 1982 may receive credit for the site in question, provided that they submit twelve consecutive months of water bills for any period from July 1, 1976 to June 30, 1982. Corresponding evaporative and consumptive loss calculations should also be provided. If water bills cannot be obtained, the industrial wastewater discharger may receive credit based on the building's

square footage by providing such information as a property tax statement, a rental agreement, or other legal document.

M. Equipment Costs

The applicant must provide itemized cost estimates of all proposed pretreatment equipment, monitoring system, spill containment system and any other equipment used to treat, monitor, convey or contain the industrial wastewater discharge.

N. Notification Report of the Discharge of Hazardous Wastes

If the wastewater discharged by your facilities to the sewer is hazardous under federal regulation ([40 CFR Parts 261.20-261.33](#)), you are required to notify the Districts of this discharge of federally regulated hazardous waste to the sewer. Please request the **Notification Report of the Discharge of Hazardous Wastes** form from the Districts by calling (562) 699-7411, extension 2900.

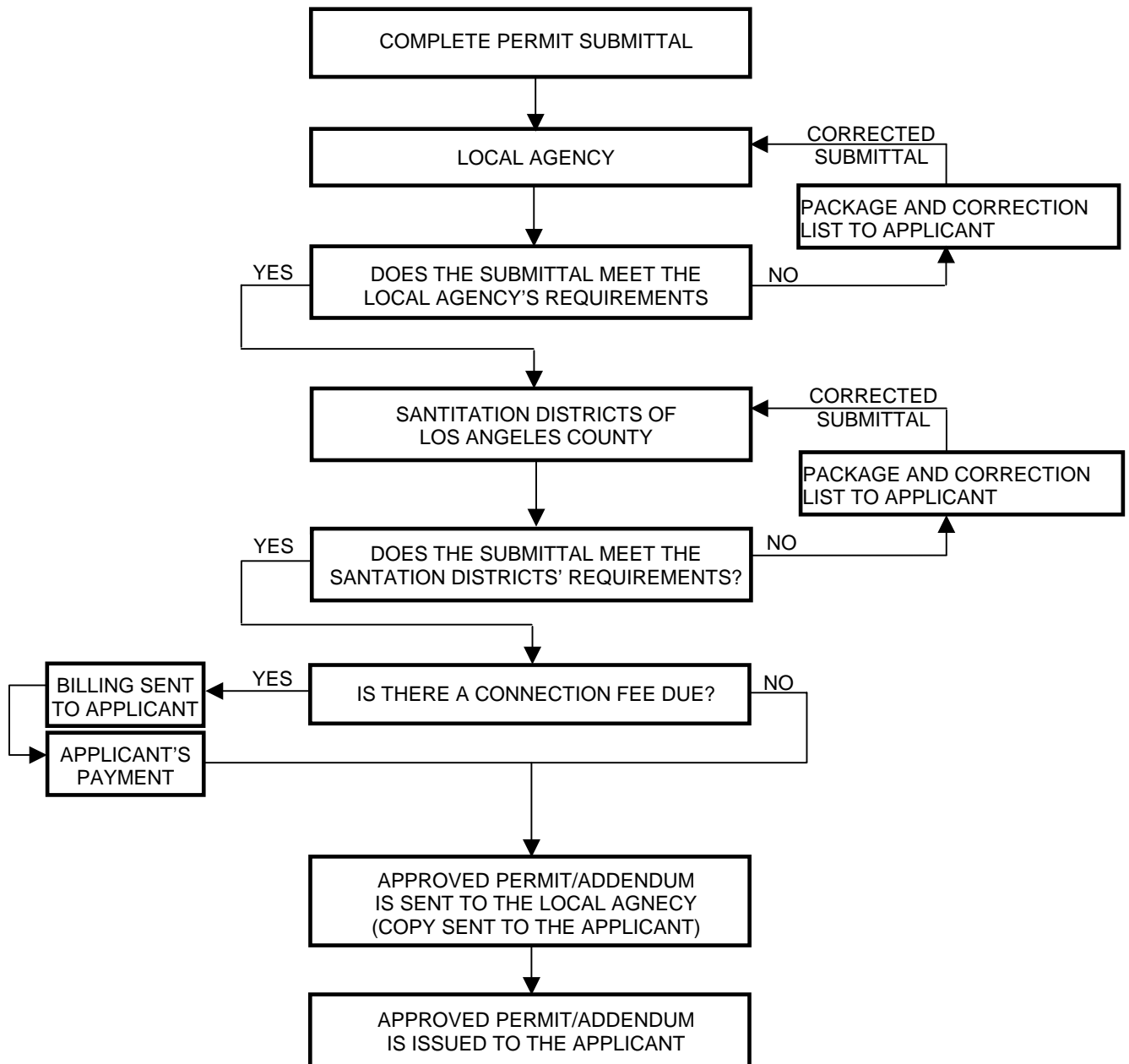
The Notification Report must include the name of the hazardous waste, the EPA hazardous Waste Number, and the type of discharge (continuous, batch or others). The Notification Report shall also include the estimated concentrations of hazardous constituents and the monthly mass discharges of these constituents, to the extent that the information is known and available to you. You must also certify that you have a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree you have determined to be economically practical. The Notification Report must also be signed by a responsible company official.

A new Notification Report must be filed if there is any substantial change in the volume or character of the hazardous wastes present in your discharge and if there are new regulations promulgated which identify additional wastes in your discharge as hazardous.

4. OVERVIEW OF THE PERMIT EVALUATION AND APPROVAL PROCESS

The Industrial Wastewater Discharge Permit is issued jointly by the Districts and the Local Agency. After the applicant has completed and reviewed the permit application form, plans and supporting information, the package must first be sent to the Local Agency. **Do not submit the permit application package directly to the Districts.** Once the Local Agency receives the permit package, the following evaluation process begins.

PERMIT SUBMITTAL EVALUATION AND APPROVAL PROCESS



4.1 Local Agency's Evaluation

A. Approval or Rejection

The local agency will approve the permit application package if the information is complete and meets with local requirements. However, if the package is insufficient or unclear, it will be returned with a list of specific corrections. Once all corrections have been made, the permit application package will be approved and forwarded to the Districts for review and approval.

B. Filing Fees

Most local agencies require the payment of a filing fee prior to approving the Industrial Wastewater Discharge Permit. To determine if a fee is required, please contact the local agency. Filing fees should be sent to the local agency with the submitted permit application package.

4.2 Districts' Evaluation

A. The Review Process

Once the permit application package has been received, the permit is logged in and checked for completeness. If the submittal is determined to be incomplete, it will be automatically rejected. If determined to be complete, the permit application package will be reviewed by an Industrial Waste Section project engineer. As part of the engineer's review, additional information may be required. In some cases this can be done by phone or mail, although if necessary a company representative may be asked to meet at the [Districts' Joint Administration Office](#) to clarify certain points. If the required information is not provided, the permit application package will be rejected and returned with a list of specific corrections. Once the corrections are made, the resubmittal must be made directly to the Districts within the specified time or enforcement actions will be initiated. Once the application is determined to be complete and correct, a connection fee evaluation will be performed.

B. Connection Fee

The project engineer will determine whether or not a connection fee is required based on the proposed discharge and baseline entitlement. If a connection fee is required, a bill will be sent to the company official listed on line 19 of the application form. If payment is made by personal or company check, 15 working days will be required to clear the payment. Check clearing is not required for certified checks. The permit package will not be processed further until payment has cleared or a certified check has been remitted. If no connection fee is required, the permit evaluation proceeds directly to the next step - permit issuance.

C. Permit Issuance

Once the connection fee payment has cleared, the approved permit will be issued. The approved permit will include a list of requirements. The company is required to comply with all indicated items on this list as a condition of the permit approval. Failure to comply with permit requirements will lead to enforcement actions and possible revocation of the Industrial Wastewater Discharge Permit.

D. Approved Permit is Returned to the Local Agency

The applicant's copy of the approved Industrial Wastewater Discharge Permit and the approved plans are returned to the local agency. The local agency will then forward the permit, plans and requirement list to the company. Copies of the cover letter and the requirement list are sent to the company the same day that the permit package is sent to the local agency.

5. MAINTAINING A VALID PERMIT

An approved permit may no longer be valid if any one of the following occurs:

1. The wastewater quality changes or the wastewater discharge changes by more than 25 percent or other threshold level, as specified in the industrial waste permit requirements.
2. Any unapproved additions or modifications are made to the existing facility.
3. The permit has not been renewed within five (5) years of the date when it was last issued (for Significant Industrial Users).
4. The company has undergone a change in ownership.

For situations where the first three conditions occur, the permittee must obtain a permit revision; renewal or addendum. For a change of ownership, the new owner must apply for a new permit.

5.1 Permit Revision

A permit revision is required when the wastewater discharge deviates from the quantity/quality indicated in the current permit by more than 25 percent. The permit revision submittal should include the following:

1. A new permit application form.
2. A detailed description explaining the reason for the change in wastewater characteristics between the existing discharge and that indicated in the original permit flow rate. (See [Section 3.3, Part B.](#)) If significant changes in wastewater-generating processes have been made since the original permit approval, the company will be required to submit updated plans and information. (See [Section 3.2.](#))

A permit revision submittal must be forwarded to the local agency for initial review. (See [Section 4.](#))

5.2 Permit Addendum

Any addition or modification which does not affect the existing wastewater quality or quantity by more than 25 percent will require a permit addendum. A permit addendum submittal should include the following:

1. A transmittal letter which gives a detailed description of all the proposed changes to the existing facility.
2. A set of plans showing the proposed changes. The addendum submittal should contain the same number of plans as a new permit submittal. (See [Table 1 in Section 3.2.](#))
3. Any additional supporting information. (See [Section 3.3.](#))

The permit addendum submittal must be submitted to the Local Agency for initial review. (See [Section 4.](#))

5.3 Permit Renewal

All Significant Industrial Users must renew their permit at least every five years.

5.4 Change in Ownership

Industrial Wastewater Discharge Permits are NOT transferable. Whenever there is a change of ownership, the new owner must apply for a new Industrial Wastewater Discharge Permit. New owners must refer to the beginning of the booklet for information on applying for an Industrial Wastewater Discharge Permit.

6. APPENDICES

6.1 [Forms](#) (forms are on our web page in Microsoft Word or Excel [DOC][XLS] and Adobe [PDF] format, most forms can be filled in on the computer)

- [Permit for Industrial Wastewater Discharge](#)
- [Form A: Applicant Questionnaire](#)
- [Form B: Calculation of Industrial Waste Discharge Flow Rate](#)
- [Form C: Tank Schedule & Spill Containment Calculations](#)
- [Form D: Check List for an Industrial Waste Discharge Permit Submittal](#)

6.2 [Sand and Grease Interceptor](#)

6.3 [Sampling Box](#)

6.4 [Local Agencies within Los Angeles County](#)

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Fill in forms can be located on our website for your convenience.

PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE
 COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
 1955 Workman Mill Road / Whittier, CA
 Mailing Address: P.O. Box 4998 / Whittier, California 90607-4998
 Stephen R. Maguin, Chief Engineer and General Manager
 (562) 699-7411

PERMIT NO: _____

01 CHECK ONE: New Sewer Connection Existing Sewer Connection
 02 Applicant _____
 (Legal Company Name)

03 Check one and fill in appropriate information
 Corporation Name _____
 Year Incorporated _____ State of Incorporation _____ ID# _____
 Partnership Name _____ Partners _____
 Sole Proprietor Name _____ Business Names _____

04 Situs Address _____
 (Street) (City) (State) (Zip)

05 Mailing Address _____
 (Street) (City) (State) (Zip)

06 Point of Discharge _____

07 Number of years applicant has been in business at present location _____
 (yrs) (months)

08 Name of Property Owner _____
 Address of Property Owner _____
 (Street) (City) (Zip) (Telephone Number)

09 Assessors Map Book No. Page No. Parcel No.

10 Type of Industry _____
 (General Description) (Federal SIC No.)

11 Number of Employees (Full Time) _____ (Part Time) _____

12 Raw Materials Used _____
 (General Description – Add Additional Sheets as Needed)

 (Daily Amount Used)

13 Products Produced _____
 (General Description – Add Additional Sheets as Needed)

 (Daily Amount Produced)

14 Wastewater Producing Operations _____
 (Full Description – Add Additional Sheets as Needed)

15 Time of Discharge _____ AM PM _____ AM PM , Shifts per day _____ Days per Week M T W Th
 F Sa Su

16 Wastewater Flow Rate _____ Gallons per Day _____ Gallons per Minute
 (Average) (Peak)

17 Constituents of Wastewater Discharge _____
 (General Description – Attach Chemical Analysis Results to the Application)

18 Person in company responsible for industrial wastewater discharge

 (Name) (Position) (Telephone Number)

I affirm that all information furnished is true and correct and that the applicant will comply with the conditions stated on the back of this permit form.

Date _____, 20 _____

19 Signature for Applicant _____
 (Company Administrative Official) (Name) (Position)

20 Approved/Reviewed by City or County Official _____
 Date _____
 For L.A. County Dept. of Public Works . . .
 City of _____
 Name _____
 Position _____

Approved by Sanitation Districts of Los Angeles County
 Date _____
 Expiration Date _____
 Stephen R. Maguin, Chief Engineer and General Manager
 By _____
 Position _____

Note: Please submit application first to the applicable City or County agency in which the point of discharge is located. Please contact the local agency for the required permit-processing fee. Submit the **original application** (Do not send copies).

CONTINUED ON NEXT PAGE

APPLICANT FOR PERMIT MUST READ THIS MATERIAL

IN CONSIDERATION OF THE GRANTING OF THIS PERMIT, the applicant agrees:

1. To furnish any additional information on industrial wastewater discharges as required by the Districts,
2. To accept and abide by all provisions of ordinances, policies and guidelines of the Districts,
3. To operate and maintain any required industrial wastewater treatment devices in a satisfactory approved manner,
4. To cooperate at all times with Districts' personnel, or their representatives, in the inspection, sampling and study of industrial wastewater facilities and discharges,
5. To immediately notify the Districts at (562) 699-7411 during normal working hours or at (562) 437-6520 or 437-1881 after 4:00 P.M. or on weekends in the event of any accident, negligence or other occurrence that causes the discharge to the sewer of any material whose nature and quantity might be reasonably judged to constitute a hazard to the public health, environment, Districts' personnel or wastewater treatment facilities,
6. To pay to the Districts annually the required surcharge or user charge fee for industrial wastewater treatment,
7. To submit, as required by the Districts, accurate data on industrial wastewater discharge flows and wastewater constituents,
8. To operate only one industrial wastewater discharge point to the sewerage system under the authority granted by this permit,
9. To submit additional pages as required to furnish the necessary information if there is inadequate room on the reverse side of this permit form to complete submittal of requested data,
10. To apply for a revised Districts' Industrial Wastewater Discharge Permit if any change in industrial processes, production, method of wastewater treatment or operations creates a significant change in industrial wastewater quality, or if the quantity of wastewater discharged changes by more than 25% or other threshold level as specified in industrial waste permit requirements,
11. To provide immediate access to authorized personnel of the Districts to any facility directly or indirectly connected to the Districts' sewerage system under emergency conditions and at all other reasonable times.

FORM A: APPLICANT QUESTIONNAIRE

NAME OF COMPANY _____

COMPANY CONTACT _____

1. Reason for Submittal - Circle A, B, C, or D and complete the corresponding questions.

A. New Permit (for new companies and for changes in ownership)

Type of business _____

Is the facility new or existing? _____

If existing, previous company name _____

Type of business _____

Industrial Wastewater Discharge Permit No. _____

Provide a description of all manufacturing processes below or in an attachment.

Provide a description of all wastewater producing operations below or in an attachment.

Are any changes being made to the facility's existing wastewater pretreatment/conveyance systems?
_____ If yes, briefly explain these modifications below or in attachments.

Is there more than one company discharging industrial wastewater at your facility? _____ If yes, provide for each company its name, a separate address and a description of its operations. If feasible, each company must apply for a separate permit and must have its own incoming water meter and a separate industrial wastewater sampling point.

If your facility will involve a new connection to the public sewer, please check the point of connection:

Local city sewer, Sanitation Districts' Trunk sewer.

If you are relocating, and had a previous Industrial Wastewater Discharge Permit, give your previous address _____, and permit number _____.

If you have received a temporary permit, give permit number _____.

All submittals for new permits **must** include a permit application, plans (if changes have occurred) and pertinent supporting information.

B. Revision of Existing Permit (for a 25 percent or more change in wastewater quantity/quality)

Permit number _____.

Has your wastewater quantity and/or quality changed over 25 percent? _____. If yes, documentation addressing the magnitude and reason(s) for the change must be submitted. If no, a revision is not required at this time.

Have there been any changes in production processes, wastewater pretreatment systems or sewerage plumbing? _____ If yes, submit plans and describe these changes below or in attachments.

All submittals for a revised permit **must** include a permit application, plans (if changes have occurred) and supporting information.

C. Addendum to Permit (for modifications to the wastewater conveyance/pretreatment system)

Permit Number _____.

Attach a brief summary of the existing conditions and the proposed changes.

Submittal must include plans and supporting information.

The applicant must also answer the questions on the back of this form.

D. Permit Renewal (for permits with expiration dates)

Permit Number _____.

Have there been any changes in production processes, wastewater pretreatment systems or sewerage plumbing? _____. If yes, submit plans and describe these changes below or in attachments.

All submittals for a permit renewal **must** include a permit application, plans (if changes have occurred) and supporting information.

2. Supporting Information Required

All submittals **must** include the following forms, which are included in Appendix 6.1:

Form A - Applicant Questionnaire

Form B - Calculation of Industrial Wastewater Discharge Flow Rate

Form C - Tank Schedule and Spill Containment Calculations

Form D - Check List

Furthermore, your company must answer the questions below to determine the additional supporting information that must be provided:

A. Waste Minimization (refer to Sections 2.4 and 3.3 E)

Please describe below or in an attachment all of your company's existing/proposed pollution prevention measures (e.g., reuse, product reformulation, process changes, housekeeping measures, etc.):

Has your company previously submitted a waste minimization plan to the Districts? _____. If the answer is no, please read Sections 2.4 and 3.3E and submit the appropriate plan (if applicable). Your company is encouraged to obtain information on source reduction measures and options for your industrial processes by calling the Districts' Industrial Waste Section at (562)699-7411, ext. 2900.

B. Wastewater Quality (refer to Sections 3.3G and H)

Please provide the results of at least two 24-hour composite analyses attesting to concentrations of chemical oxygen demand, suspended solids and any priority or regulated pollutants that may be found in your wastewater. Your company must also provide material safety data sheets of all chemicals used in the facility that may directly or indirectly contaminate your wastewater.

C. New Equipment (refer to Sections 3.3 F, J and K)

Is your company installing new pretreatment, monitoring, conveyance or industrial equipment that may have an impact on the quality or quantity of your wastewater? _____. If yes, please provide catalog cuts of all units and important details such as: number of units, sizes, hours of operation, pump rating curves, operating parameters, etc.

D. Baseline Monitoring Report (refer to Sections 2.1 and 3.3 I)

Does your company currently fall under one of EPA's categories? _____. If yes, your company must submit a Baseline Monitoring Report, unless it was submitted one in the past and there have been no changes in operations that may change your categorical standards.

E. Rainwater Management (refer to Section 3.2)

Are there any outdoor drains, trenches or sumps at your facility that are connected to the sewerage system? _____. If yes, your company must submit plans and information that describe the existing means to divert rainwater from the sewerage system or a proposal to comply with the Districts' rainwater guidelines. Please be informed that new automatic rainwater diversion systems will not be approved unless the applicant proves that this is the only feasible alternative.

FORM B: CALCULATION OF INDUSTRIAL WASTE DISCHARGE FLOW RATE

COMPANY NAME: _____

Calculation of flow rate is based on: _____ Adjusted metered water supply (Company must complete the calculations below)
 (Check one) _____ Direct measurement through a Districts' approved effluent flow measurement system*
 _____ Estimate for a facility not yet in operation**

ADJUSTED METERED WATER SUPPLY CALCULATIONS (Round all figures to two decimals)

MILLION
GALLONS
PER YEAR

I. Incoming Water

1. Metered Water Supply from Purveyor (Water Company)
Use most recent 12 consecutive months and attach copies of water bills. MGY
2. Water Supply from Company Well.
Attach meter or water master data for most recent 12 consecutive months. MGY
3. Water Received in Raw Materials, or by other means.
Explain in attachments..... MGY
4. Rainwater/Groundwater Discharged to the Sewerage System.
Explain in attachments..... MGY
5. Total Incoming Water.
(Add Lines 1 to 4)..... MGY

II. Water Losses

6. Wastewater Discharged to Stormwater Drainage System
Explain in attachments. (NPDES Permit No _____) MGY
7. Water Lost Through Evaporation and Irrigation.
(add lines a + b + c + d on the back of this form) MGY
8. Water Lost in Products
Explain in attachments..... MGY
9. Sanitary Flow Deduction
(from line "e" on the back of this form) MGY
10. Total Water Loses
(add lines 6 to 9) MGY

III. Industrial Wastewater Discharged

11. Calculated Industrial Wastewater Discharged to the public sewer
(subtract line 10 from line 5) MGY
12. Any Proposed increase (+) or decrease (-) in industrial waste-
water discharge to the public sewer? (explain in attachments)..... MGY
Circle one
13. Total proposed yearly industrial wastewater discharge
(add lines 11 and 12) MGY
14. Average industrial wastewater flow
(use line 13 to calculate below)..... MGY

Million Gallons per Year	x	1,000,000	÷	Number of Discharge Days per Year	=	Gallons per Day
	x	1,000,000	÷		=	

This is the average daily flow rate that must be used on the application for industrial wastewater discharge.
 (It may be rounded to two significant figures).

Note: The Applicant must also complete calculations on the back of this page.

* If your company currently has an **approved effluent wastewater flow measurement system**, please submit effluent totalizer readings for the last twelve months. Your company does not have to complete the rest of this form.

** The company must submit detailed information that substantiates how the flow rate was estimated.

WATER LOSSES

a. COOLING TOWER LOSSES

Tonnage	x	Hours of Operation per year	x	Load¹	x	1.38²	÷	1,000,000	=	Mil. Gal. per Year	
	x		x		x		÷		=		
	x		x		x		÷		=		a

¹Load = 0.50 to 0.80

²1.38 = Gallons evaporated per hour per ton

b. BOILER LOSSES

Horsepower	x	Hours of Operation per year	x	Load³	x	% Evaporation⁴	x	3.82⁵	÷	1,000,000	=	Mil. Gal. per Year	
	x		x		x		x		÷		=		
	x		x		x		x		÷		=		b

³Load = 0.50 to 0.80

⁴% Evaporation = (100 - % condensate returned)/100

⁵3.82 = Gallons evaporated per hour per horsepower

c. OTHER EVAPORATIVE LOSSES

(Explain in attachments)

Million Gallons per Year	
	c

d. IRRIGATION LOSSES

Square Feet of Land Irrigated	x	18.7⁶	x	1,000,000	=	Mil. Gal. per Year	
	x		x		=		d

⁶18.7 = Gallons irrigated per square foot per year

e. SANITARY FLOW DEDUCTION

No. Employees	x	Working Days per Year	x	Gallons Per Employee per Day	÷	1,000,000	=	Mil. Gal. per Year	
	x		x	15	÷	1,000,000	=		e

INCOMING WATER METERS

Please list all the accounts (or other identification) for all meters that measure the water supplied to the facility.

Meter #	Location	Account #
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Abbreviations and Conversion Factors

MGY = million gallons per year

1 cubic foot = 7.48 gallons

1 CCF = 748 gallons

1 acre foot = 325,900 gallons

1 acre = 43,560 square feet

FORM C: TANK SCHEDULE & SPILL CONTAINMENT CALCULATIONS

Please complete one form for each containment area (make additional copies if necessary).

TANK I.D. NUMBER	TANK NAME	TANK DIMENSIONS¹	TANK CONTENTS	pH	IS TANK ELEVATED²

¹ Specify height and diameter if tank is round; or length, width and height if tank is rectangular.

² If the tank is elevated above the ground on legs, specify the location (elevation) of the bottom of the tank. If the tank is located on a pad or solid platform, specify dimensions of the pad or platform.

2. Spill Containment Calculations (make additional copies if necessary).

Answer the following questions:

- | | <u>Check One</u> |
|--|--|
| a) If this is your company's first permit submittal to the Districts, do you store hazardous or restricted materials? | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| b) Does your company currently have tanks/equipment with hazardous or restricted solutions that lack adequate spill containment? | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| c) Is your company proposing any additions/modifications of tanks or equipment that will need spill containment? | YES <input type="checkbox"/> NO <input type="checkbox"/> |

If the answer to any of the questions above is "YES," your company must submit plans that describe and propose an adequate spill containment system and must complete the calculations below:

1. Containment Volume Required:

The required containment volume is equal to the capacity of the largest tank containing a solution that requires containment plus the volume of six inches of rain over the containment area (if the area is not roofed).

$$\textcircled{1} = \text{Volume of largest tank (assumed to spill)} + \text{Volume of 6 inches of rain over contained area (if area is outdoors)}$$

$$\textcircled{1} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$\textcircled{1} = \underline{\hspace{2cm}} \text{ (specify units)}$$

2. Containment Volume Provided:

The containment provided is equal to the volume of the dike, berm, sump or other containment structure minus the volume displaced by tanks, pads and other equipment within the containment area.

$$\textcircled{2} = \text{Volume of containment dike} - \text{Volume displaced by tanks and other equipment}$$

$$\textcircled{2} = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}$$

$$\textcircled{2} = \underline{\hspace{2cm}} \text{ (specify units)}$$

Subtract $\textcircled{1}$ from $\textcircled{2}$

$$\textcircled{2} - \textcircled{1} = \underline{\hspace{2cm}} \text{ (must be greater than zero to satisfy spill containment requirements)}$$

Note: All drains, sumps and associated plumbing within spill containment areas must be clearly shown on submitted drawings.

FORM D: CHECK LIST FOR AN INDUSTRIAL WASTE DISCHARGE PERMIT SUBMITTAL

COMPANY NAME: _____

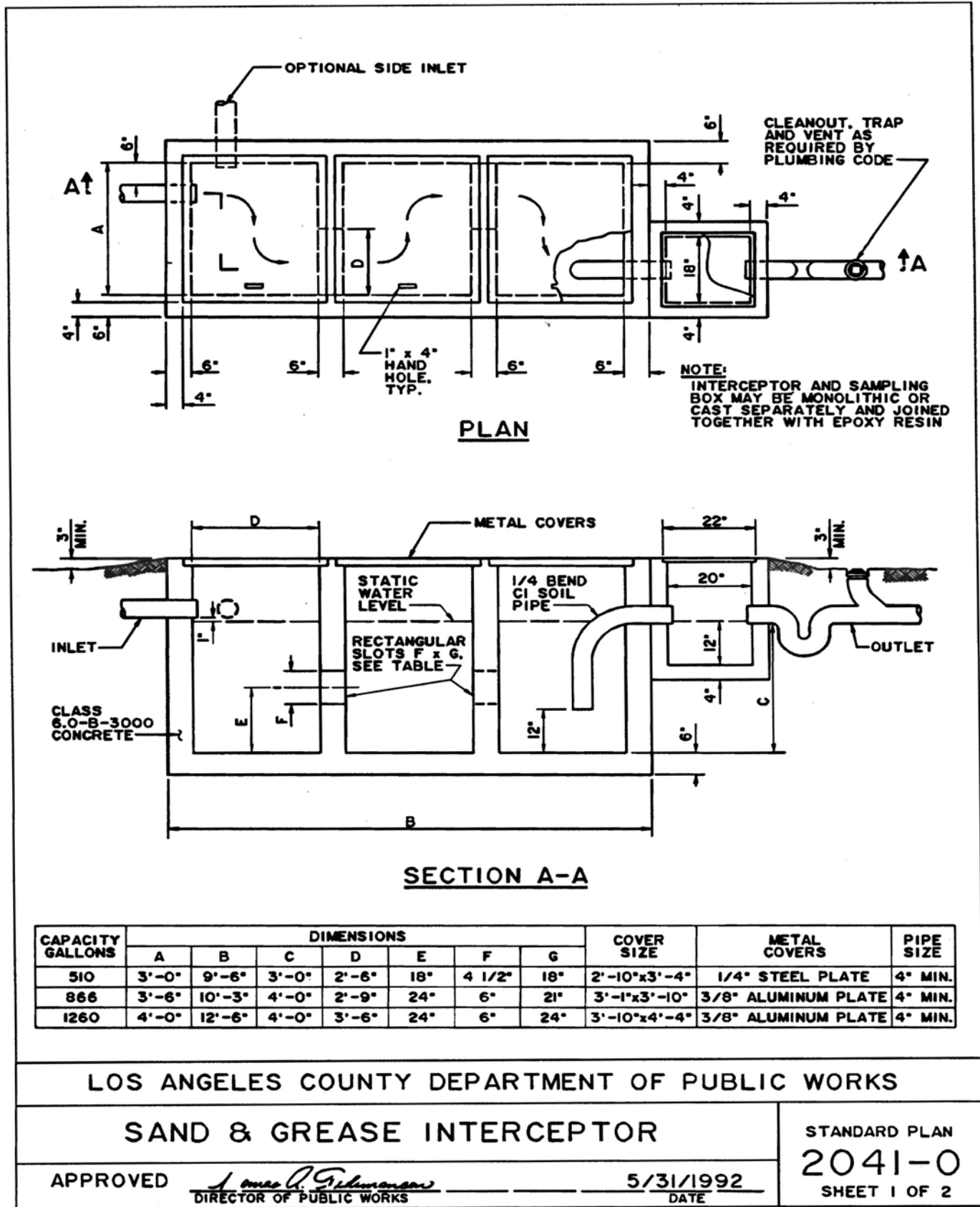
- 1. Permit Application
- 2. Plans (Minimum size: 11" x 17"; maximum size 30" x 42").....
 - a. Required Plans:
 - Sewerage Plan (location of equipment, process tanks and sewer lines)
 - Plot Plan (location of facility, sampling point and connection to the public sewer)
 - Plans of Pretreatment Facilities
 - b. Additional Plans (if needed)
 - Spill Containment System
 - Flow Monitoring System
 - Rainwater Management
 - Combustible Gas Monitoring System
- 3. Supporting Information:
 - ALWAYS
REQUIRED

- Applicant's Questionnaire (Form A)
 - Estimation of Discharge Flow Rate and Water Bills (Form B).....
 - Tank Schedule and Spill Containment Calculations (Form C)
 - Checklist (Form D).....
 - Process Description.....
 - COMPLETE
FORM A TO
DETERMINE
WHICH OF
THESE ARE
NECESSARY

- Waste Minimization Plan
 - Material Safety Data Sheets.....
 - Wastewater Analyses
 - Baseline Monitoring Report (for EPA categorical companies)
 - Pump Curves
 - Catalog Cuts of Pretreatment Equipment.....
 - Baseline Credit Information
 - Equipment Costs
 - Notification Report of the Discharge of Hazardous Wastes (if applicable)

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APPENDIX 6.2



LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SAND & GREASE INTERCEPTOR

STANDARD PLAN
2041-0
SHEET 1 OF 2

APPROVED

James A. Richardson
DIRECTOR OF PUBLIC WORKS

5/31/1992
DATE

SUPERSEDES COUNTY ENGINEER STD. 1-2

APPENDIX 6.2 (cont.)

NOTES

1. THE APPROVAL OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS MUST BE OBTAINED BEFORE INSTALLATION.
2. THE INTERCEPTOR TO BE CONSTRUCTED OF TYPE II PORTLAND CEMENT CONCRETE.
3. INTERCEPTOR EXCEEDING 6'-6" IN DEPTH MUST BE CONSTRUCTED OF REINFORCED CONCRETE.
4. IF INSTALLED INSIDE OF BUILDING, THE TOP OF INTERCEPTOR MAY BE LEVEL WITH FLOOR PROVIDED THAT WASTES ENTER THROUGH INLET PIPE ONLY.
5. ALL SURFACE WATER MUST DRAIN AWAY FROM INTERCEPTOR TO EXCLUDE RAIN WATER FROM PUBLIC SEWERS.
6. STRUCTURE NOT FOR TRAFFIC LOADING.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

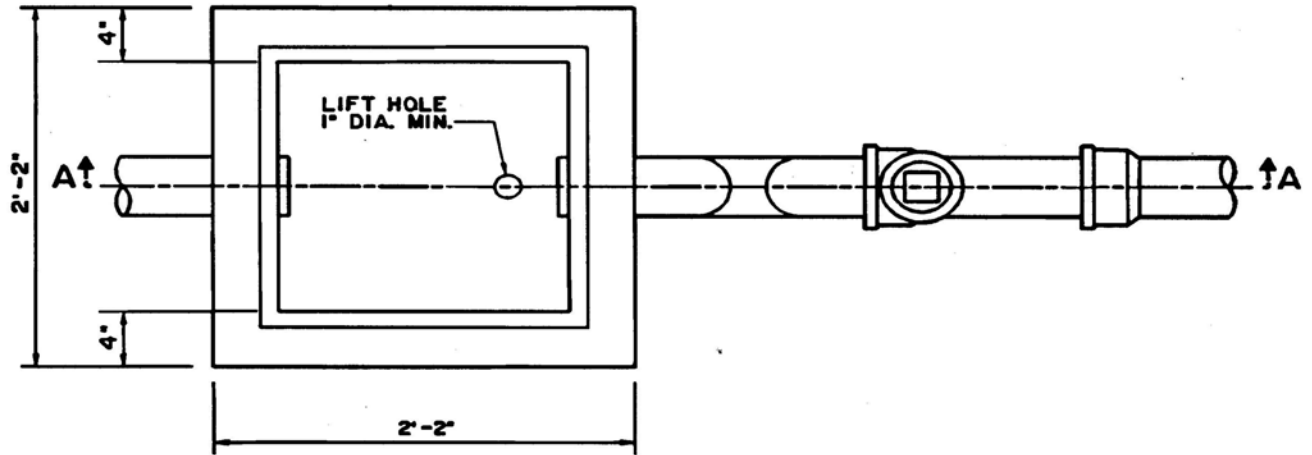
SAND & GREASE INTERCEPTOR

STANDARD PLAN

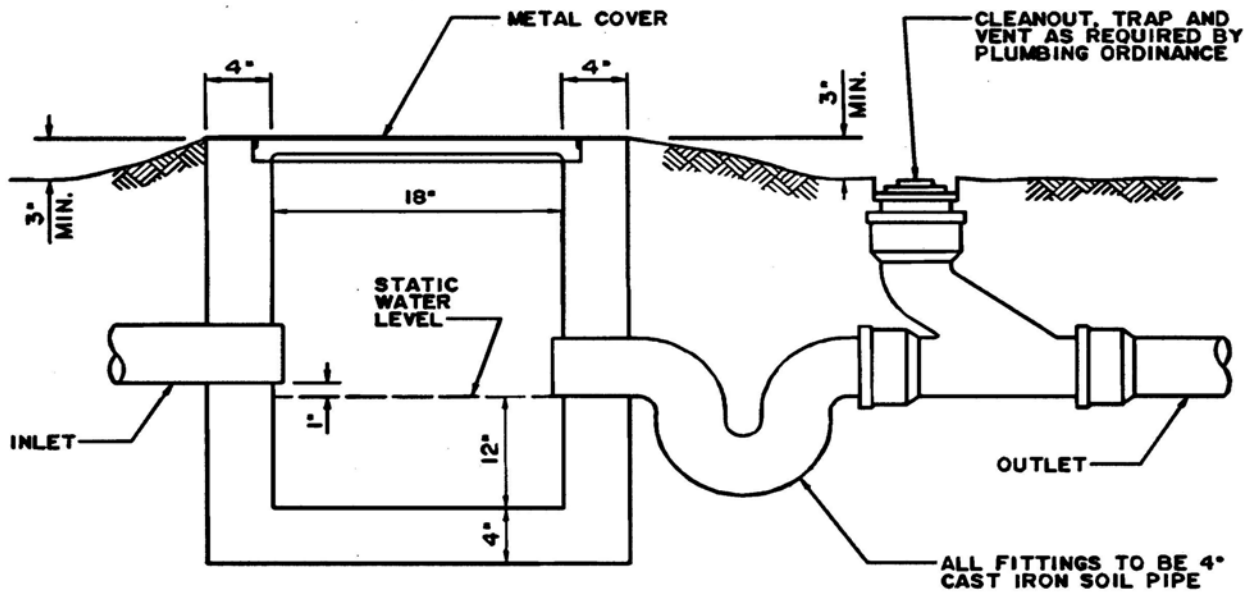
2041-0

SHEET 2 OF 2

APPENDIX 6.3



PLAN
WITH COVER REMOVED



SECTION A-A

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SAMPLING BOX

STANDARD PLAN
2044-0
SHEET 1 OF 2

APPROVED

James A. Gilman
DIRECTOR OF PUBLIC WORKS

5/31/1992
DATE

SUPERSEDES COUNTY ENGINEER STD. 1-12

APPENDIX 6.3 (cont.)

NOTES

1. THE APPROVAL OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS MUST BE OBTAINED BEFORE INSTALLATION.
2. IF INSTALLED OUTSIDE OF A BUILDING, ELEVATE THE SIDEWALLS ABOVE THE SURROUNDING GROUND SURFACE TO EXCLUDE STORM WATER.
3. IF LOCATED INSIDE OF A BUILDING, THE TOP OF SAMPLING BOX MAY BE LEVEL WITH FLOOR PROVIDED THAT WASTE ENTERS THROUGH INLET PIPE ONLY.
4. ALL SURFACE WATER MUST DRAIN AWAY FROM SAMPLING BOX TO EXCLUDE RAINWATER FROM THE PUBLIC SEWER.
5. STRUCTURE NOT FOR TRAFFIC LOADING.
6. THIS FACILITY TO BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SAMPLING BOX

STANDARD PLAN
2044-0
SHEET 2 OF 2

APPENDIX 6.4

LOCAL AGENCIES WITHIN LOS ANGELES COUNTY

Note: Cities not listed are covered by the Department
of Public Works of Los Angeles County
(see Table 1 on Page 14)

<u>LOCAL AGENCY</u>	<u>ADDRESS</u>	<u>PHONE NUMBER</u>
Department of Public Works of Los Angeles County	900 S. Fremont Ave. Alhambra CA 91803-1331	626/458-5173
Alhambra	111 S. First St., 91801	626/570-5080
Arcadia	11800 Goldring Rd., 91066	626/256-6551
Azusa	213 E. Foothill Blvd., 91702	626/334-5125, x5261
Baldwin Park	14403 E. Pacific Ave., 91706	626/960-4011, x458
Bell	6330 Pine Ave., 90201	323/588-6211
Beverly Hills	450 N. Crescent Dr., 90210	310/285-1000
Bradbury	600 Winston Ave., 91010	626/358-3218
Claremont	207 Harvard Ave., 91711	909/399-5474
Compton	205 S. Willowbrook Ave., 90220	310/605-5505
Covina	125 E. College St., 91723	310/605-5505
Downey	11111 Brookshire Ave., 90241	562/904-7016
El Monte	11333 E. Valley Blvd., 91731	626/580-2050
El Segundo	350 Main St., 90245	310/524-2300
Glendora	116 E. Foothill Blvd., 91740	626/914-8223
Hawthorne	4455 126th St., Engineering Division 90250	310/970-7955
Hermosa Beach	1315 Valley Dr., 90254	310/318-0259
Huntington Park	6550 Miles Ave., 90255	323/582-6161
Industry	15651 E. Stafford St., 91744	626/333-2211
Inglewood	One Manchester Blvd., 90301	310/412-5545
Lancaster	44933 N. Fern Ave., 93534	661/723-6093
Long Beach	City of Long Beach, Water Department 1800 Wardlow Rd., 90807	562/570-2382
Los Angeles	(Bureau of Sanitation), 2417 Media Center Dr., 90065	323/342-6098
Lynwood	11330 Bullis Rd., Engineering Dept., 90262	323/342-6098
Manhattan Beach	3621 Bell Ave., 90266	310/802-5303
Maywood	4319 E. Slauson Ave., 90270	323/562-5721
Monrovia	415 S. Ivy Ave., 91016	626/932-5550
Montebello	1600 W. Beverly Blvd., 90640	323/887-1497
Palos Verdes Estates	340 Palos Verdes Dr. West P. O. Box 1086/90274	310/378-0389
Pasadena	100 N. Garfield Ave, 91109-7215	626/744-4147
Pomona	505 S. Garey Ave., 91766	909/650-2285
Redondo Beach	415 Diamond St., 90277	310/372-1171, x2432
Rolling Hills	2 Portuguese Bend Rd., 90274	562/802-7880
San Gabriel	532 W. Mission Dr., 91776	626/308-2806, x713
San Marino	2200 Huntington Dr., 91108	626/300-0714
Santa Fe Springs	11300 Greenstone Ave., 90670	562/944-9713
Sierra Madre	232 W. Sierra Madre Blvd., 91024	626/355-7135
Signal Hill	2175 Cherry Ave., 90806	562/989-7355
South El Monte	John Hunter & Associates 13310 Firestone Blvd. #A2, Santa Fe Springs, 90670	562/802-7880
South Gate	8650 California Ave., 90280	562/802-7880
South Pasadena	1414 Mission St., 91030	626/799-9101
Torrance	3031 Torrance Blvd., 90503	310/618-5897
Vernon	4305 Santa Fe Ave., 90058	323/583-8811
West Covina	1444 W. Garvey Ave., 91790	626/939-8425
Whittier	13230 E. Penn St., 90602	562/464-3519

3. Surcharge Connection Fee – Los Angeles County Sanitation District

AN ORDINANCE PRESCRIBING FEES FOR THE PRIVILEGE OF CONNECTING ANY PARCEL OR INDUSTRIAL OPERATION WITHIN THE BOUNDARIES OF COUNTY SANITATION DISTRICT NO.2 OF LOS ANGELES COUNTY DIRECTLY OR INDIRECTLY TO THE SEWERAGE SYSTEM, OR FOR INCREASING THE STRENGTH AND/OR QUANTITY OF WASTEWATER ATTRIBUTABLE TO A CONNECTED PARCEL OR INDUSTRIAL OPERATION WITHIN THE DISTRICT, AND PROVIDING FOR THE COLLECTION OF SUCH CHARGES.

THE BOARD OF DIRECTORS OF COUNTY SANITATION DISTRICT NO.2 OF LOS ANGELES COUNTY ORDAINS AS FOLLOWS:

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PART I - GENERAL PROVISIONS

SECTION 1.01 -- SHORT TITLE

This Ordinance shall be known as the *Master Connection Fee Ordinance of County Sanitation District No. 2 of Los Angeles County*.

SECTION 1.02 -- PURPOSE

The purpose of this Ordinance is to impose fees for the privilege of connecting facilities to the sewerage system or for the privilege of increasing the strength or quantity of wastewater discharged from connected facilities, and to provide for the collection of those fees. Revenue derived under this Ordinance shall be used for expansion of the District's capital facilities and to fund loans as provided for in this Ordinance.

SECTION 1.03 -- AUTHORITY

The District is empowered to fix fees or charges for the privilege of connecting directly or indirectly to the sewerage system and to prescribe, revise, and collect fees, tolls, rates, rentals, or other charges for services and facilities furnished by the District pursuant to California Health & Safety Code section 5471.

SECTION 1.04 -- ADDITIONAL REVENUE

The revenue derived under this Ordinance shall be in addition to all revenue otherwise collected by or on behalf of the District including, but not limited, to ad valorem taxes, federal and state grants and loans, bond revenue, contract revenue, investment income, annexation fees, service charges, and wastewater treatment surcharges imposed under the Wastewater Ordinance.

SECTION 1.05 -- ADMINISTRATION

The Chief Engineer shall administer, implement, and enforce the provisions of this Ordinance.

SECTION 1.06 -- VALIDITY

If any court holds any part, section, subsection, paragraph, sentence, clause or phrase of this Ordinance to be held invalid or unconstitutional for any reason, that decision shall not affect the validity or constitutionality of the remainder of this Ordinance. The Board of Directors declares that it would have adopted each provision of this Ordinance irrespective of the validity of any other provision.

SECTION 1.07 – SUPERSESSION

This Ordinance shall supersede the *Master Connection Fee Ordinance of County Sanitation District No. 2 of Los Angeles County* adopted on September 23, 1992, and the subsequent amendments adopted July 9, 1997, with respect to any rights, duties, or privileges arising after the effective date of this Ordinance.

SECTION 1.08 -- EFFECTIVE DATE

This Ordinance shall become effective July 1, 2007.

PART II – DEFINITIONS

This Ordinance shall be construed according to the following definitions:

SECTION 2.01 -- ADDED BURDEN

An added burden shall mean the actual or anticipated number of capacity units attributable to a parcel or industrial operation in excess of its baseline capacity units.

SECTION 2.02 – BASELINE CAPACITY UNITS

Baseline capacity units shall mean the number of capacity units that the District attributes to a parcel or industrial operation in accordance with Section 3.05.

SECTION 2.03 -- BOARD OF DIRECTORS

Board of Directors shall mean the Board of Directors of County Sanitation District No. 2 of Los Angeles County.

SECTION 2.04 -- CAPACITY UNIT

Capacity unit shall mean the burden in terms of capacity that a typical single-family home places on the sewerage system based on flow, chemical oxygen demand, and suspended solids.

SECTION 2.05 -- CHIEF ENGINEER

Chief Engineer shall mean the Chief Engineer and General Manager of County Sanitation District No. 2 of Los Angeles County or his designee.

SECTION 2.06 -- COD OR CHEMICAL OXYGEN DEMAND

COD or chemical oxygen demand shall mean the measure of chemically-decomposable material in wastewater as represented by the oxygen utilized as determined by the procedures specified in Section 414(A) of the Wastewater Ordinance.

SECTION 2.07 – DISCHARGER

Discharger shall mean any person responsible for the payment of a connection fee for an industrial operation.

SECTION 2.08 -- DISTRICT

District shall mean County Sanitation District No. 2 of Los Angeles County.

SECTION 2.09 -- DOMESTIC WASTEWATER

Domestic wastewater shall mean the water-carried wastes produced from non-industrial activities and that result from normal living processes, irrespective of where these wastes are discharged to the sewerage system.

SECTION 2.10 – FACILITY

Facility shall mean an improvement on or to be located on a parcel that discharges or will discharge wastewater directly or indirectly to the sewerage system.

SECTION 2.11 – INDUSTRIAL OPERATION

Industrial operation means any activity that generates industrial wastewater, whether located on one or multiple parcels, that is discharged or will be discharged directly or indirectly to the sewerage system, and that has obtained or is required to obtain an industrial wastewater discharge permit as provided in the Wastewater Ordinance.

SECTION 2.12 -- INDUSTRIAL WASTEWATER

Industrial wastewater shall mean all liquid-carried wastes of the community, excluding domestic wastewater, rainwater, groundwater, stormwater, and drainage of contaminated and uncontaminated water. Industrial wastewater may include wastewater from any industrial operation, including manufacturing, processing, producing, institutional, commercial, agricultural, or other operations containing significant quantities of wastes of nonhuman origin. All liquid wastes hauled by truck, rail, or another means for disposal to the sewer shall constitute industrial wastewater regardless of the original source of the wastes. Hauled domestic wastewater is included in the category of industrial wastewater. Wastewater discharges from the following sources, when accepted into the sewerage system by the Chief Engineer, shall constitute industrial wastewater under this Ordinance: rainwater, groundwater, stormwater, or contaminated and uncontaminated water.

SECTION 2.13 – JOINT OUTFALL DISTRICTS

Joint Outfall Districts shall mean those Districts signatory to the Amended Joint Outfall Agreement, effective July 1, 1995, and as thereafter amended.

SECTION 2.14 – JOINT OUTFALL SYSTEM

Joint Outfall System shall mean the portion of the sewerage system jointly owned by the Joint Outfall Districts and listed in the Amended Joint Outfall Agreement, effective July 1, 1995, and as thereafter amended.

SECTION 2.15 -- LOCAL AGENCY

Local agency includes the County of Los Angeles; a city, whether general law or chartered; a school district; a community redevelopment agency; a municipal corporation; a district; or any board, commission, or agency thereof.

SECTION 2.16 -- LOCAL GOVERNMENTAL FACILITY

Local governmental facility shall mean any facility that is: a) owned by a local agency; b) located on a parcel that is entirely within the District; c) not required to pay wastewater treatment surcharges under the Wastewater Ordinance; d) used solely for governmental as opposed to proprietary functions; and e) dedicated to uses that directly benefit the public in general as opposed to a single class or classes of individuals.

SECTION 2.17– MASTER ANNEXATION FEE ORDINANCE

Master Annexation Fee Ordinance shall mean the *Master Annexation Fee Ordinance of County Sanitation District No. 2 of Los Angeles County* adopted May 9, 2007, and as thereafter amended.

SECTION 2.18 -- MASTER SERVICE CHARGE ORDINANCE

Master Service Charge Ordinance shall mean the *Master Service Charge Ordinance of County Sanitation District No. 2 of Los Angeles County* adopted May 9, 2007, and as thereafter amended.

SECTION 2.19 -- NEXT ANTICIPATED CONFIGURATION

Next anticipated configuration shall mean:

- (1) The District's sewers and pumping facilities,
- (2) The Joint Outfall System sewers and pumping facilities upstream of the water reclamation plants,
- (3) The treatment facilities of the San Jose Creek Water Reclamation Plant, including all associated effluent management facilities, that will exist following its next planned expansion,
- (4) The solids processing facilities at the Joint Water Pollution Control Plant, and
- (5) The tunnel and ocean outfall system conveying reclaimed water from the Joint Water Pollution Control Plant.

SECTION 2.20 -- NOTICE OF CHARGES

Notice of charges shall mean a written statement by the Chief Engineer setting forth the amount of the connection fee, including any penalties, interest, and additional charges, due pursuant to this Ordinance.

SECTION 2.21 -- PARCEL

Parcel shall mean any area of land contained within a single legal description that is shown on maps prepared and filed by the Assessor's Office of the county in which the land is located.

SECTION 2.22 -- PERSON

Person shall mean any individual, sole proprietorship, partnership, limited liability company, limited liability partnership, corporation, committee, association, public agency, public entity, municipal corporation, or any other organization or group of persons, public or private.

SECTION 2.23 -- PRIME INTEREST RATE

Prime interest rate shall mean the base rate on corporate loans posted by at least 75% of the nation's thirty largest banks as published in *The Wall Street Journal* or, if not reported in such newspaper, as reported in such other source as may be selected by the Chief Engineer.

SECTION 2.24 -- SERVICE OF NOTICE OF CHARGES

Service of notice of charges shall mean delivery of a notice of charges in person or by first class or certified mail addressed to the address last known to the Chief Engineer. Service of notice of charges made by mail shall be complete at the time of deposit, postage prepaid, in a facility regularly serviced by the U.S. Postal Service.

SECTION 2.25 -- SEWERAGE SYSTEM

Sewerage system shall mean the whole or any part of the network of wastewater collection, conveyance, treatment, and disposal facilities that are either owned in whole or in part by the District or used by the District pursuant to contract.

SECTION 2.26 -- SUSPENDED SOLIDS

Suspended solids shall mean the insoluble solid matter suspended in wastewater under conditions normally found in the sewer that is separable by laboratory filtration in accordance with the procedures specified in Section 414(A) of the Wastewater Ordinance.

SECTION 2.27 -- UNIT OF USAGE

Unit of usage shall mean the basic unit of measure (e.g., dwelling unit, square footage) that quantifies the degree of use of a particular facility located on or to be located on a parcel. The square footage of a facility shall be based upon the gross exterior dimensions of the structure.

SECTION 2.28 -- USER CATEGORY

User category shall mean the specific classification of a facility that characterizes its use (e.g., single family home, restaurant).

SECTION 2.29 -- WASTEWATER

Wastewater shall mean the liquid-carried wastes of the community and all constituents and residues thereof. Wastewater includes domestic and industrial wastewater but does not include rainwater, groundwater, stormwater, or drainage or other water unless otherwise provided for in Section 2.12 of this Ordinance.

SECTION 2.30 -- WASTEWATER ORDINANCE

Wastewater Ordinance shall mean the *Wastewater Ordinance* adopted by the County Sanitation Districts of Los Angeles County effective on April 1, 1972, and as amended effective on July 1, 1975, July 1, 1980, July 1, 1983, November 1, 1989, and July 1, 1998 and as thereafter amended.

PART III – FEES

SECTION 3.01 -- IMPOSITION OF CONNECTION FEES

Any person imposing an added burden on the sewerage system shall pay a connection fee to the District, except for the following:

- (1) An existing industrial operation placing an added burden of 25% or less; or
- (2) A local governmental facility.

SECTION 3.02 -- CALCULATION OF THE CONNECTION FEE

The connection fee shall equal the product of the rate determined in accordance with Section 3.03 and the added burden placed on the sewerage system.

SECTION 3.03 -- DETERMINATION OF THE CONNECTION FEE RATE

The Chief Engineer shall determine the total capital cost required to construct an incremental expansion of the sewerage system of the next anticipated configuration for the fiscal year in which the connection fee rate is to become effective. In addition, the Chief Engineer shall determine the number of capacity units that can be accommodated by the incremental expansion, and then divide the former value by the latter value. The resulting value shall be known as the capital improvement component.

The Chief Engineer shall also determine the amount of the cash reserves that will be available on July 1 for the fiscal year in which the connection fee rate is to become effective. This amount shall be divided by the total number of existing sewage units in the District as determined in accordance with the Master Service Charge Ordinance. The resulting value shall be converted into dollars per capacity unit on the basis that one sewage unit is equivalent to one capacity unit and shall be known as the cash reserve component.

The service charge rate adopted by the Board of Directors pursuant to the Master Service Charge Ordinance for the fiscal year in which the connection fee rate is to become effective shall be converted into dollars per capacity unit on the basis that one sewage unit is equivalent to one capacity unit. The resulting value shall be known as the operational cost component.

- (1) For persons imposing an added burden on the sewerage system who are not subject to requirement of the Wastewater Ordinance to pay wastewater treatment surcharges, the connection fee rate shall be equal to the sum of the capital improvement component, the cash reserve component, and the operational cost component. The Board of Directors shall from time to time adopt this connection fee rate.
- (2) For persons imposing an added burden on the sewerage system who are subject to the requirement of the Wastewater Ordinance to pay wastewater treatment surcharges, the connection fee rate shall be equal to the sum of the capital improvement component and the cash reserve component.

SECTION 3.04 -- CALCULATION OF THE NUMBER OF CAPACITY UNITS

- (1) The number of capacity units (CU) attributable to a parcel or industrial operation shall be determined by the following formula:

$CU = X \left(\frac{FLOW_c}{FLOW_{sfh}} \right) + Y \left(\frac{COD_c}{COD_{sfh}} \right) + Z \left(\frac{SS_c}{SS_{sfh}} \right)$

where:

- X = The proportion of the total capital costs required to construct an incremental expansion of the sewerage system of the next anticipated configuration for conveyance, treatment, and disposal of wastewater that is attributable to flow.
- Y = The proportion of the total capital costs required to construct an incremental expansion of the sewerage system of the next anticipated configuration for conveyance, treatment, and disposal of wastewater that is attributable to COD,
- Z = The proportion of the total capital costs required to construct an incremental expansion of the sewerage system of the next anticipated configuration for conveyance, treatment, and disposal of wastewater that is attributable to suspended solids,
- FLOW_{sfh} = Average flow of wastewater from a single-family home in gallons per day,
- COD_{sfh} = Average loading of COD in the wastewater from a single-family home in pounds per day,
- SS_{sfh} = Average loading of suspended solids in the wastewater from a single-family home in pounds per day,
- FLOW_c = Actual or anticipated flow of wastewater, in gallons per day, that will enter the sewerage system from the parcel or industrial operation,
- COD_c = Actual or anticipated loading of COD, in pounds per day, that will enter the sewerage system from the parcel or industrial operation,
- SS_c = Actual or anticipated loading of suspended solids, in pounds per day, that will enter the sewerage system from the parcel or industrial operation,

The Board of Directors shall periodically adopt the values for X, Y, Z, FLOW_{sfh}, COD_{sfh}, and SS_{sfh}.

- (2) For the purpose of determining the number of capacity units attributable to a parcel other than an industrial operation, the Board of Directors shall, from time to time, adopt a list of user categories and associated mean loadings per unit of usage for each user category. Using the adopted list of user categories, the Chief Engineer shall determine the user category that best represents the actual or anticipated use of the parcel or facilities on the parcel. If the Chief Engineer determines that a parcel has multiple facilities or uses for which no single user category accurately represents the actual or intended uses or facilities on that parcel, the Chief Engineer may assign multiple

user categories to that parcel. The Chief Engineer shall then determine the number of units of usage corresponding to the user categories of the uses or facilities existing or anticipated to exist on the parcel. Using the applicable user categories, the associated mean loadings, and the units of usage, the Chief Engineer shall then determine the estimated flow, COD, and suspended solids loadings for the parcel.

- (3) For the purpose of determining the number of capacity units attributable to an industrial operation, flow, COD, suspended solids and domestic wastewater loadings shall be based on the following:
 - (a) For new industrial operations, information contained in the Permit for Industrial Wastewater Discharge as defined in the Wastewater Ordinance, or
 - (b) For existing industrial operations, information contained in the discharger's current or audited surcharge statement or in its approved revised Permit for Industrial Wastewater Discharge, or other credible information, including the District's monitoring data.

The Chief Engineer may, at any time after connection, monitor the actual flow, COD, and suspended solids discharged by an industrial operation. If a discrepancy exists between the measured and reported quantities of flow, COD, and suspended solids, the determination of the appropriate connection fee shall be based on the amount of the measured quantities.

SECTION 3.05 – DETERMINATION OF THE NUMBER OF BASELINE CAPACITY UNITS

- (1) The number of baseline capacity units attributable to an industrial operation shall be as follows:
 - (a) The number of capacity units for which connection fees have been paid; and
 - (b) The greatest number of capacity units shown to have been used by the industrial operation in any one fiscal year during the period fiscal year 1976-77 through 1981-82, based on paid surcharge statements; or
 - (c) For industrial operations discharging less than one million gallons per year, the greatest number of capacity units shown to have been used in any one fiscal year during the period, fiscal year 1976-77 through 1981-82, based on water consumption or other credible information.
- (2) The number of capacity units attributable to a parcel that does not include an industrial operation shall be as follows:
 - (a) The number of capacity units for which connection fees have been paid; and
 - (b) The greatest number of capacity units attributable to the parcel during the period July 1, 1976 through December 14, 1981, based on the applicable user category and units of usage for each facility located on the parcel..

SECTION 3.06 – ELECTION TO DEMONSTRATE

Industrial operations that discharge more than one million gallons per year or that have greater than average industrial wastewater strengths may elect to demonstrate a reduction under this section. If the number of capacity units attributable to such an industrial operation increases by more than 25%, an election may be made to demonstrate that changed circumstances or conditions, including operational modifications, conservation, or pretreatment, will reduce the number of capacity units attributable to that industrial operation to an increase of 25% or less.

Election and Collateral Requirements. An election to demonstrate a reduction must be made in writing to the Chief Engineer within 45 days of service of notice of charges. The election to demonstrate must be accompanied by collateral in the form of a cash deposit, a surety bond, a perpetual standby letter of credit, an assignment of certificate of deposit, or such other cash-equivalent security as may be approved by the Chief Engineer in an amount that will reasonably assure payment of 50% of the connection fee that would be due in the event the demonstration fails to result in the required reduction.

Optional Non-Refundable Deposit. A nonrefundable deposit of a portion of the connection fee may be made at the commencement of the demonstration period. This deposit shall be used as a capacity unit credit, calculated at the connection fee rate in effect at the time of deposit, to be applied to the connection fee payable at the end of the demonstration period. Collateral requirements shall then be determined based on the balance of the connection fee.

Demonstration Period. The period in which a reduction may be demonstrated shall be the next full fiscal year, July 1 through June 30, inclusive, following the written election to demonstrate. The demonstration period may be postponed to the subsequent fiscal year if a request for postponement is made in writing before the start of the original demonstration period. Requests for postponement must be accompanied by both 1) a nonrefundable payment of five percent of the billed connection fee, and 2) the collateral provided above. No capacity units shall be attributable to the industrial operation as a result of the nonrefundable payment.

The Chief Engineer may allow the twelve-month demonstration period to begin during the fiscal year in which the election is made. The demonstration shall then be based on discharge data obtained during that period, and such data shall be submitted in a format acceptable to the Chief Engineer.

At the conclusion of the demonstration period, the Chief Engineer shall evaluate all pertinent data and determine whether the required reduction has been demonstrated. Capacity units associated with a nonrefundable deposit shall not be considered in determining whether the required reduction has been demonstrated.

Successful Demonstration. Upon demonstrating to the reasonable satisfaction of the Chief Engineer that the added burden has been reduced to a 25% or less increase:

- (1) The collateral will be returned; and
- (2) Any capacity units associated with the nonrefundable deposit shall be added to the baseline for the industrial operation.

Unsuccessful Demonstration. If the demonstration has not resulted in the required reduction, the Chief Engineer shall prepare and serve a notice of charges. The connection fee shall be determined on the basis of the added burden during the demonstration period, less any capacity units associated with a nonrefundable deposit. The connection fee shall be based on the connection fee rate then in effect. Unless an election to make a supplemental demonstration is made, the connection fee shall be immediately due and payable and shall become delinquent on the date set forth in the notice of charges. Delinquent charges shall be subject to penalty and additional interest under Section 4.02. The Chief Engineer shall apply the collateral to all delinquent charges, including penalties and interest.

Supplemental Demonstration. If the required reduction has not been demonstrated, the discharger may elect to make supplemental demonstrations. The demonstration period for supplemental demonstrations shall be the twelve months immediately following the end of the previous demonstration period. Elections to make supplemental demonstrations shall be made in writing within the time period specified by the Chief Engineer, and shall be accompanied by collateral as provided above. Dischargers electing to make supplemental demonstrations must make a nonrefundable payment of five percent of the connection fee that would have been due at the end of the previous demonstration period. No capacity units shall be attributed to the industrial operation as a result of this payment.

Effect of Bankruptcy Filing. If a discharger files for bankruptcy protection during a demonstration period, the demonstration shall be immediately voided, and all collateral (except any nonrefundable payments) shall be refunded.

SECTION 3.07 – TEMPORARY GROUNDWATER CLEAN-UP PROJECTS

Temporary groundwater clean-up projects or groundwater clean-up technology demonstration projects that will not place an added burden on the sewerage system for longer than five years shall be subject to a connection fee calculated in accordance with this Ordinance that is prorated according to the proportion that the number of years in which any system use is to occur bears to the period of 40 years. Additional prorated connection fees shall be imposed with regard to any such project that continues beyond its initially projected termination date. Additional prorated connection fees shall be imposed for increases in

anticipated use in accordance with the provisions of Section 3.01, except that no such project shall be eligible for the election described in Section 3.06. In the event that any project for which a prorated connection fee has been paid continues to place an added burden on the sewerage system for longer than five years, a full connection fee shall be imposed at the then-current connection fee rate less the amount of all sums previously paid to the District as prorated connection fees for such project.

SECTION 3.08 – INDUSTRIAL OPERATION RELOCATION CREDITS

The Chief Engineer shall allow a relocation credit when an established industrial operation relocates to a different parcel within the same sewerage system if:

- (1) Essentially the same industrial operation is relocated to the new parcel;
- (2) The Chief Engineer determines that there is adequate hydraulic capacity to accommodate the discharge associated with the relocated industrial operation and that the relocation does not impose an added burden on the sewerage system;
- (3) The industrial operation being relocated actively discharged from the parcel to the sewerage system for a twelve consecutive month period before the relocation;
- (4) The Chief Engineer determines that the industrial operation is being relocated for a business purpose other than effectuating a transfer of capacity units; and
- (5) The person relocating the industrial operation is one of the following:
 - (a) The same person responsible for the establishment of the capacity units for the industrial operation;
 - (b) The successor-in-interest to the person responsible for the establishment of the capacity units for the industrial operation;
 - (c) The owner of a parcel where an industrial operation responsible for the establishment of the capacity units has ceased and who subsequently establishes a new industrial operation on that parcel (for at least twelve consecutive months); or
 - (d) The tenant or lessee of a parcel where an industrial operation responsible for the establishment of the capacity units has ceased and who subsequently establishes a new industrial operation at that site (for at least twelve consecutive months), if the tenant or lessee has obtained the prior written consent of the parcel owner.

When a relocation credit is allowed, the parcel from which the industrial operation was relocated shall retain at least the number of capacity units attributable to the user category "dry manufacturing." Relocation credits shall be adjusted to reflect any difference in capacity unit formulas between Districts. Relocation credits applied for by persons described in Subsections (5)(c) and (d) above, shall not exceed four times the average number of capacity units that the industrial operation used during any twelve consecutive month period before the relocation. In no case shall relocation credits exceed the number of capacity units that would be attributable to the industrial operation before the relocation had the industrial operation been located in the District.

If the discharge from an industrial operation for which a relocation credit has been allowed is not within 25% of the capacity units remaining at the site within six months following the allowance of the credit, then the Chief Engineer shall revoke the relocation credit, and shall impose connection fees, penalties, and interest on the industrial operation that was allowed the relocation credit. Relocation credits shall not be allowed when a facility has been abandoned for more than six months and a subsequent industrial operation has initiated a wastewater discharge from the facility.

PART IV – COLLECTION AND PAYMENT

SECTION 4.01 -- COLLECTION AND PAYMENT OF CONNECTION FEE

Connection fees payable by persons responsible for industrial operations are due upon service of notice of charges. Connection fees payable by other persons must be paid before an added burden, as that term is

defined in Section 2.01, is imposed on the sewerage system and before a sewer connection permit is issued by the local permitting agency.

Within 45 days after service of notice of charges, a person responsible for an industrial operation that has not elected to demonstrate a reduction under Section 3.06 may elect to pay a minimum of ten percent of the fee and pay the remaining balance in equal monthly installments over a period not to exceed six years. Upon making such an election, the Chief Engineer shall prepare a written payment schedule. The payment schedule shall set forth each monthly payment, and shall be signed and agreed to by the discharger.

- (1) Payment schedules of three years or less shall provide for interest on the unpaid balance at one percent over the prime interest rate in effect at the beginning of the fiscal year during which the election was made, compounded monthly, not to exceed 0.95 percent per month.
- (2) Payment schedules of greater than three years shall provide for interest on unpaid balance at three percent over prime interest rate in effect at the beginning of the fiscal year during which the election was made, compounded monthly, not to exceed 0.95 percent per month.

Installment payments are due and payable on the first day of each month and become delinquent on the fifteenth day of each month. Penalties and additional interest under Section 4.02 shall be imposed on delinquent installment payments. Upon default in the payment of any monthly installment, the entire connection fee, penalties, and interest shall become immediately due. Capacity units associated with the principal portion of the connection fee shall be attributed to the industrial operation only upon full payment of the entire installment payment obligation, including the principal amount of the connection fee, accrued interest, and penalties. In the event of the closure of the industrial operation or the termination of discharge during the installment payment period, the capacity units associated with the principal portion of the payments received shall be attributed to the industrial operation.

The connection fee shall be paid to the District either in person at the Joint Administration Office of the County Sanitation Districts of Los Angeles County, located at 1955 Workman Mill Road, Whittier, California, or by mailing the appropriate payment to the County Sanitation Districts of Los Angeles County, P.O. Box 4998, Whittier, California 90607-4998.

SECTION 4.02 -- PENALTY AND INTEREST CHARGES FOR DELINQUENT CONNECTION FEE PAYMENT

For existing connections, unpaid fees and charges shall become delinquent 45 days after mailing or personal service of notice of charges. For new connections, unpaid fees and charges shall become delinquent 45 days after an application for connection to the sewerage system is approved by the District or 45 days after a connection is made, whichever occurs first. A basic penalty charge of 10 percent of any unpaid amount shall be added to any connection fee that becomes delinquent. Additional monthly penalties and interest at the maximum rate provided by law shall accrue on the total of all delinquent fees plus penalty charges.

SECTION 4.03 -- FEE FOR RETURNED CHECKS

The Chief Engineer shall add an administrative charge to the connection fee in the event a check tendered for payment is returned or dishonored. The administrative charge shall be in the amount of the District's added cost in processing returned or dishonored checks, as determined by the Chief Engineer, up to the maximum amount allowed by law.

SECTION 4.04 -- MANNER OF PAYMENT

The Chief Engineer shall determine the manner in which annexation fees may be paid. If a manner of payment requires the District to pay a transaction fee, the parcel owner shall pay the transaction fee to the District as an additional charge.

PART V – FUNDS

SECTION 5.01 -- DISPOSITION OF FUNDS

Connection fee revenue shall be divided into two parts, the capital improvement portion and the operational cost portion. The capital improvement portion shall be determined by multiplying the total

revenue received by the proportion of the connection fee rate attributable to the capital improvement component. The capital improvement portion of the fee shall be deposited into the capital improvement funds pursuant to Section 5.02. The remainder of the fee, the operational cost portion, shall be deposited into the District's Operating Fund.

SECTION 5.02 -- CAPITAL IMPROVEMENT FUNDS

The District shall establish a fund known as the "District's Capital Improvement Fund." The share of the capital improvement portion of the connection fee revenue attributable to the District's conveyance facilities shall be deposited into the District's Capital Improvement Fund. District's Capital Improvement Fund monies shall be used only for expansion of the District's conveyance facilities, except those funds loaned pursuant to Section 5.03.


The District, along with the other Joint Outfall Districts, shall establish a fund known as the "Joint Outfall System Capital Improvement Fund." The Joint Outfall System Capital Improvement Fund shall be jointly owned and maintained by the Joint Outfall Districts. The share of the capital improvement portion of the connection fee revenue attributable to the Joint Outfall System shall be deposited into the Joint Outfall System Capital Improvement Fund. Joint Outfall System Capital Improvement Fund monies shall be used only for expansion of the Joint Outfall System, except those funds loaned pursuant to Section 5.03.

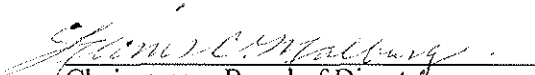
SECTION 5.03 – AUTHORIZATION TO LOAN FUNDS

In addition to other forms of investments permitted under the District's investment policy, the Chief Engineer is authorized, pursuant to Government Code Section 66013, to make inter-fund loans from the District's Capital Improvement Fund and from the District's proportionate share of the Joint Outfall System Capital Improvement Fund to the District's Operating Fund provided that:

- (1) The Capital Improvement Fund retains sufficient monies to timely undertake necessary expansion-related capital projects; and
- (2) Any loan made pursuant to this section shall be for a term of not to exceed 15 years at an interest rate equal to the District's Composite Interest Rate on invested funds as of the date of the loan.

ATTEST:


 Clerk, Board of Directors
 County Sanitation District No. 2
 of Los Angeles County


 Chairperson, Board of Directors
 County Sanitation District No. 2
 of Los Angeles County

PASSED AND ADOPTED by the Board of Directors of County Sanitation District No. 2 of Los Angeles County on May 9, 2007 by the following vote:

AYES: Directors Yamauchi, Martins, Bello, Aceituno, Larsen, Lee, Del Rio, Calhoun, Reyes Uranga, Cardenas, Lopez-Reid, Lau, Ramirez, Lemons, Beilke, Sawkins, DeWitt, Newcomer, Yaroslavsky, and Malburg

NOES: None

ABSTAIN: None

ABSENT: Director Trejo

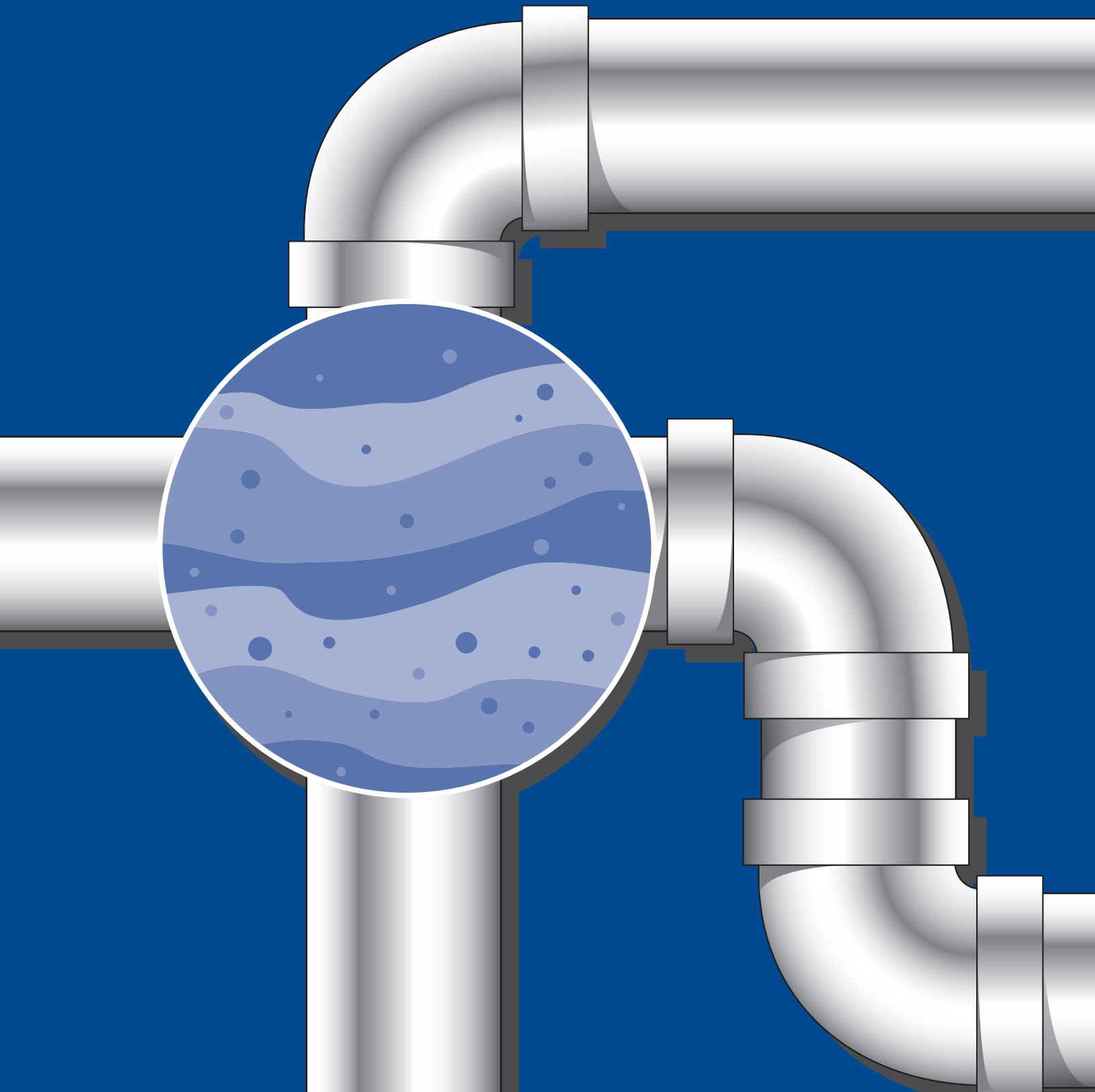

 Secretary of the Board of Directors
 County Sanitation District No. 2
 of Los Angeles County

E. Cross Connections

1. Cross Connection Manual – US EPA



Cross-Connection Control Manual





Cross-Connection Control Manual

United States
Environmental Protection Agency
Office of Water
Office of Ground Water and Drinking Water

First Printing 1973
Reprinted 1974, 1975
Revised 1989
Reprinted 1995
Technical Corrections 2003

Preface

Plumbing cross-connections, which are defined as actual or potential connections between a potable and non-potable water supply, constitute a serious public health hazard. There are numerous, well-documented cases where cross-connections have been responsible for contamination of drinking water, and have resulted in the spread of disease. The problem is a dynamic one, because piping systems are continually being installed, altered, or extended.

Control of cross-connections is possible, but only through thorough knowledge and vigilance. Education is essential, for even those who are experienced in piping installations fail to recognize cross-connection possibilities and dangers. All municipalities with public water supply systems should have cross-connection control programs. Those responsible for institutional or private water supplies should also be familiar with the dangers of cross-connections and should exercise careful surveillance of their systems.

This *Cross-Connection Control Manual* has been designed as a tool for health officials, water-works personnel, plumbers, and any others involved directly or

indirectly in water supply distribution systems. It is intended to be used for educational, administrative, and technical reference in conducting cross-connection control programs. This manual is a revision of an earlier book entitled *Water Supply and Plumbing Cross-Connections* (PHS Publication Number 957), which was produced under the direction of Floyd B. Taylor by Marvin T. Skodje, who wrote the text and designed the illustrations.

Many of the original illustrations and text have been retained in this edition. Previous revisions were done by Peter C. Karalekas, Jr. with guidance from Roger D. Lee incorporating suggestions made by the staff of the EPA Water Supply Division, other governmental agencies, and interested individuals.

This 3rd edition was produced as a result of an updated need for cross-connection control reference material reflecting an increase in cross-connection control activity throughout the United States. It has been revised and re-issued reflecting a demand for its use, together with requests for a document that covers the broad spectrum of

cross-connection control from both the basic hydraulic concepts through the inclusion of a sample program that can be a guide for a program at the municipal level. New backflow devices have been included in this revision that are now being produced by manufacturers reflecting the needs of the market. Updated actual cross-connection case histories have been added containing graphic schematic illustrations showing how the incidents occurred and how cross-connection control practices could be applied to eliminate future re-occurrence. A more detailed explanation of cross-connection control “containment” practice has been included together with the use for “internal backflow protective devices” and “fixture outlet protection”.

This 1989 edition was prepared by Howard D. Hendrickson, PE, vice president of Water Service Consultants, with assistance from Peter C. Karalekas, Jr. of Region 1, EPA, Boston.

This latest (2003) edition has technical corrections provided by Howard D. Hendrickson, P.E., showing updates on pages iv, 18, 23, 30, 31, and 32.

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An AWWA Statement of Policy on Public Water Supply Matters.

Cross Connections

Adopted by the Board of Directors Jan. 26, 1970, revised June 24, 1979, reaffirmed June 10, 1984 and revised Jan. 28, 1990 and Jan. 21, 2001.

The American Water Works Association (AWWA) recognizes water purveyors have the responsibility to supply potable water to their customers. In the exercise of this responsibility, water purveyors or other responsible authorities must implement, administer, and maintain ongoing backflow prevention and cross-connection control programs to protect public water systems from the hazards originating on the premises of their customers and from temporary connections that may impair or alter the water in the public water systems. The return of any water to the public water system after the water has been used for any purpose on the customer's premises or within the customer's piping system is unacceptable and opposed by AWWA.

The water purveyor shall assure that effective backflow prevention measures commensurate with the degree of hazard, are implemented to ensure continual protection of the water in the public water distribution system. Customers, together with other authorities are responsible for preventing contamination of the private plumbing system under their control and the associated protection of the public water system.

If appropriate back-flow prevention measures have not been taken, the water purveyor shall take or cause to be taken necessary measures to ensure that the public water distribution system is protected from any actual or potential backflow hazard. Such action would include the testing, installation, and continual assurance of proper operation and installation of backflow-prevention assemblies, devices, and methods commensurate with the degree of hazard at the service connection or at the point of cross connection or both. If these actions are not taken, water service shall ultimately be eliminated.

To reduce the risk private plumbing systems pose to the public water distribution system, the water purveyor's backflow prevention program should include public education regarding the hazards backflow presents to the safety of drinking water and should include coordination with the cross connection efforts of local authorities, particularly health and plumbing officials. In areas lacking a health or plumbing enforcement agency, the water purveyor should additionally promote the health and safety of private plumbing systems to protect its customers from the hazards of backflow.

Purpose and Scope

Public health officials have long been concerned about cross-connections and backflow connections in plumbing systems and in public drinking water supply distribution systems. Such cross-connections, which make possible the contamination of potable water, are ever-present dangers. One example of what can happen is an epidemic that occurred in Chicago in 1933. Old, defective, and improperly designed plumbing and fixtures permitted the contamination of drinking water. As a result, 1,409 persons contracted amebic dysentery; there were 98 deaths. This epidemic, and others resulting from contamination introduced into a water supply through improper plumbing, made clear the responsibility of public health officials and water purveyors for exercising control over public water distribution systems and all plumbing systems connected to them. This responsibility includes advising and instructing plumbing installers in the recognition and elimination of cross-connections.

Cross-connections are the links through which it is possible for contaminating materials to enter a potable water supply. The contaminant enters the potable water system when the pressure of the polluted source exceeds the pressure of the potable source. The action may be called backsiphonage or backflow. Essentially it is reversal of the hydraulic gradient that can be produced by a variety of circumstances.

It might be assumed that steps for detecting and eliminating cross-connections would be elementary and obvious. Actually, cross-connections may appear in many subtle forms and in unsuspected places. Reversal of pressure in the water may be freakish and unpredictable. The probability of contamination of drinking water through a cross-connection occurring within a single plumbing system may seem remote; but, considering the multitude of similar systems, the probability is great.

Why do such cross-connections exist?

First, plumbing is frequently installed by persons who are unaware of the inherent dangers of cross-connections. Second, such connections are made as a simple matter of convenience without regard to the dangerous situation that might be created. And, third, they are made with reliance on inadequate protection such as a single valve or other mechanical device.

To combat the dangers of cross-connections and backflow connections, education in their recognition and prevention is needed. First, plumbing installers must know that hydraulic and pollutorial factors may combine to produce a sanitary hazard if a cross-connection is present. Second, they must realize that there are available reliable and simple

standard backflow prevention devices and methods that may be substituted for the convenient but dangerous direct connection. And third, it should be made clear to all that the hazards resulting from direct connections greatly outweigh the convenience gained. This manual does not describe all the cross-connections possible in piping systems. It does attempt to reduce the subject to a statement of the principles involved and to make it clear to the reader that such installations are potentially dangerous. The primary purpose is to define, describe, and illustrate typical cross-connections and to suggest simple methods and devices by which they may be eliminated without interfering with the functions of plumbing or water supply distribution systems.

Human Blood in the Water System

Public Health Significance of Cross-Connections

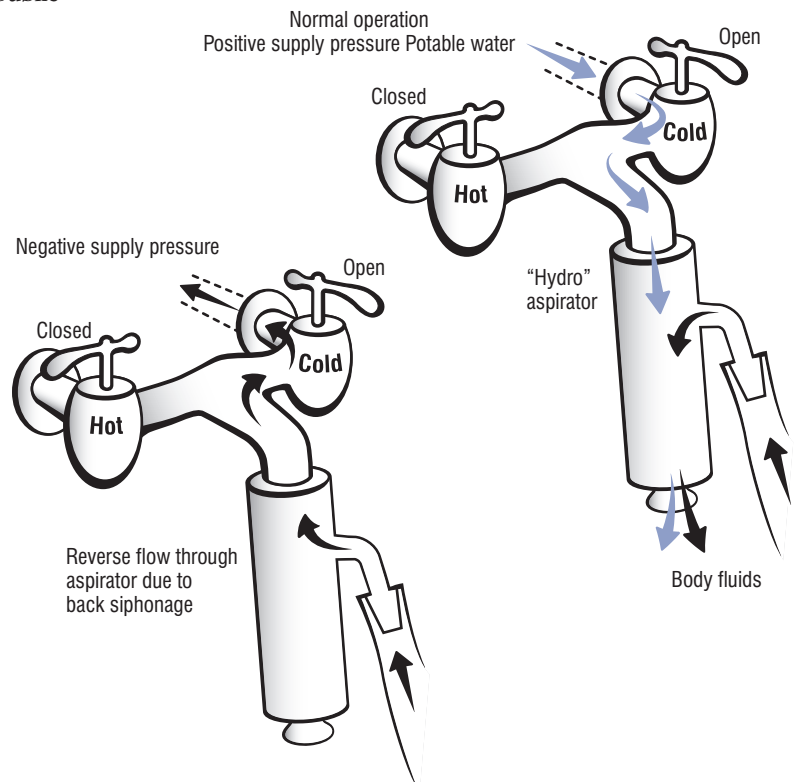
Public health officials have long been aware of the impact that cross-connections play as a threat to the public health. Because plumbing defects are so frequent and the opportunity for contaminants to invade the public drinking water through cross-connections are so general, enteric illnesses caused by drinking water may occur at most any location and at any time.

The following documented cases of cross-connection problems illustrate and emphasize how actual cross-connections have compromised the water quality and the public health.

Health Department officials cut off the water supply to a funeral home located in a large southern city, after it was determined that human blood had contaminated the fresh water supply. City water and plumbing officials said that they did not think that the blood contamination had spread beyond the building, however, inspectors were sent into the neighborhood to check for possible contamination. The chief plumbing inspector had received a telephone call advising that blood was coming from drinking fountains within the building. Plumbing and county health department inspectors went to the scene and found evidence that the blood had been circulating in the water system within the building. They immediately ordered the building cut off from the water system at the meter.

Investigation revealed that the funeral home had been using a hydraulic aspirator to drain fluids from the bodies of human “remains” as part of the embalming process. The aspirator directly connected to the water supply system at a faucet outlet located on a sink in the “preparation” (embalming) room. Water flow through the aspirator created suction that was utilized to draw body fluids through a hose and needle attached to the suction side of the aspirator.

The contamination of the funeral home potable water supply was caused by a combination of low water pressure in conjunction with the simultaneous use of the aspirator. Instead of the body fluids flowing into the sanitary drain, they were drawn in the opposite direction—into the potable water supply of the funeral home!



Burned in the Shower

A resident of a small town in Alabama, jumped in the shower at 5 a.m. one morning in October, 1986, and when he got out his body was covered with tiny blisters. “The more I rubbed it, the worse it got,” the 60 year old resident said. “It looked like someone took a blow torch and singed me.”

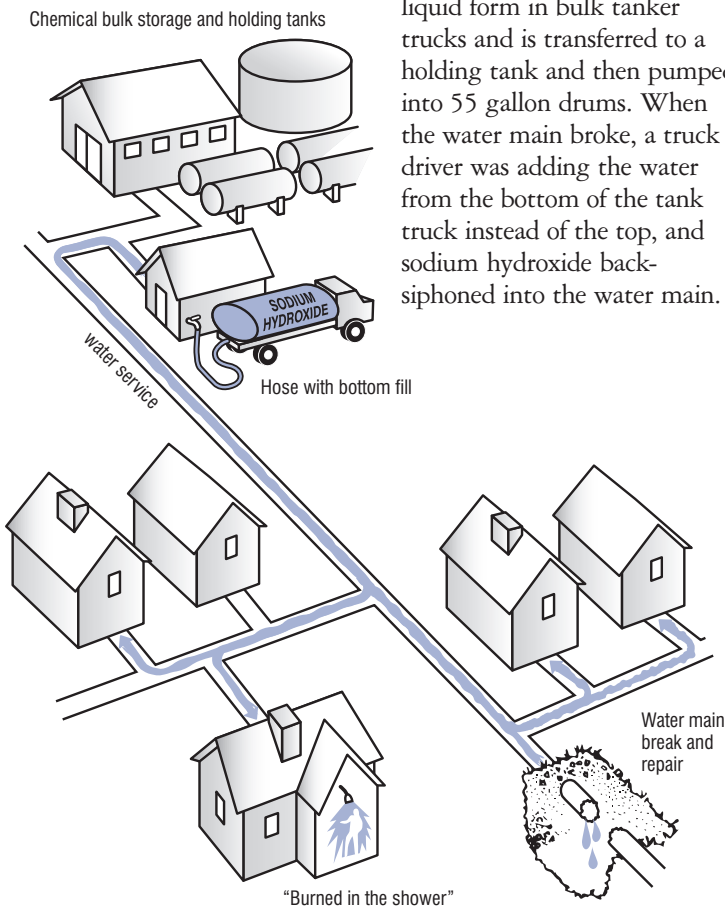
He and several other residents received medical treatment at the emergency room of the local hospital after the water system was contaminated with sodium hydroxide, a strong caustic solution.

Other residents claimed that, “It (the water) bubbled up and looked like Alka Seltzer. I stuck my hand under the faucet and some blisters came up.”

One neighbor’s head was covered with blisters after she washed her hair and others complained of burned throats or mouths after drinking the water.

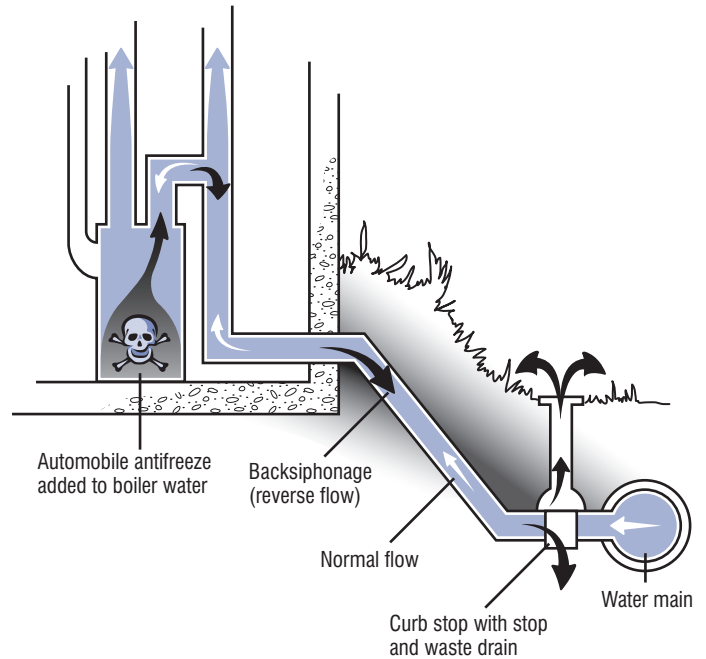
The incident began after an 8-inch water main, that fed the town, broke and was repaired. While repairing the water main, one workman suffered leg burns from a chemical in the water and required medical treatment. Measurements of the ph of the water were as high as 13 in some sections of the pipe.

Investigation into the cause of the problem led to a possible source of the contamination from a nearby chemical company that distributes chemicals such as sodium hydroxide. The sodium hydroxide is brought to the plant in liquid form in bulk tanker trucks and is transferred to a holding tank and then pumped into 55 gallon drums. When the water main broke, a truck driver was adding the water from the bottom of the tank truck instead of the top, and sodium hydroxide back-siphoned into the water main.



Heating System Anti-Freeze into Potable Water

Bangor Maine Water Department employees discovered poisonous antifreeze in a homeowner’s heating system and water supply in November, 1981. The incident occurred when they shut off ‘the service line to the home to make repairs. With the flow of water to the house cut off, pressure in the lines in the house dropped and the anti-freeze, placed in the heating system to prevent freeze-up of an unused hot water heating system, drained out of the heating system into house water lines, and flowed out to the street. If it had not been noticed, it would have entered the homeowner’s drinking water when the water pressure was restored.

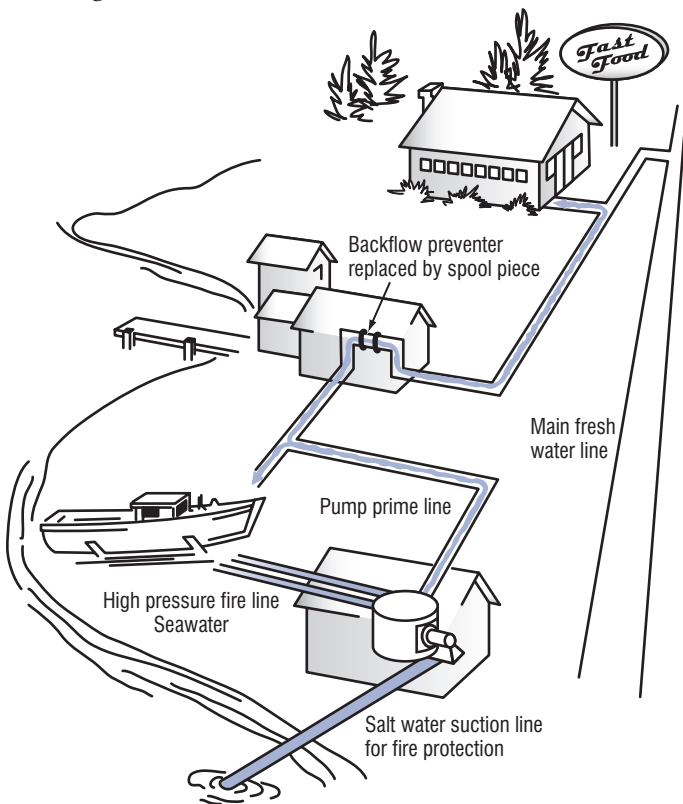


Salty Drinks

In January, 1981, a nationally known fast food restaurant located in southeastern United States, complained to the water department that all their soft drinks were being rejected by their customers as tasting “salty.” This included soda fountain beverages, coffee, orange juice, etc. An investigation revealed that an adjacent water customer complained of salty water occurring simultaneously with the restaurant incident. This second complaint came from a water front ship repair facility that was also being served by the same water main lateral. The (investigation centered on the ship repair facility and revealed the following:

- A backflow preventer that had been installed on the service line to the shipyard had frozen and had been replaced with a spool piece sleeve.
- The shipyard fire protection system utilized sea water that was pumped by both electric and diesel driven pumps.
- The pumps were primed by potable city water.

With the potable priming line left open and the pumps maintaining pressure in the fire lines, raw salt water was pumped through the priming lines, through the spool sleeve piece, to the ship repair facility and the restaurant.



Paraquat in the Water System

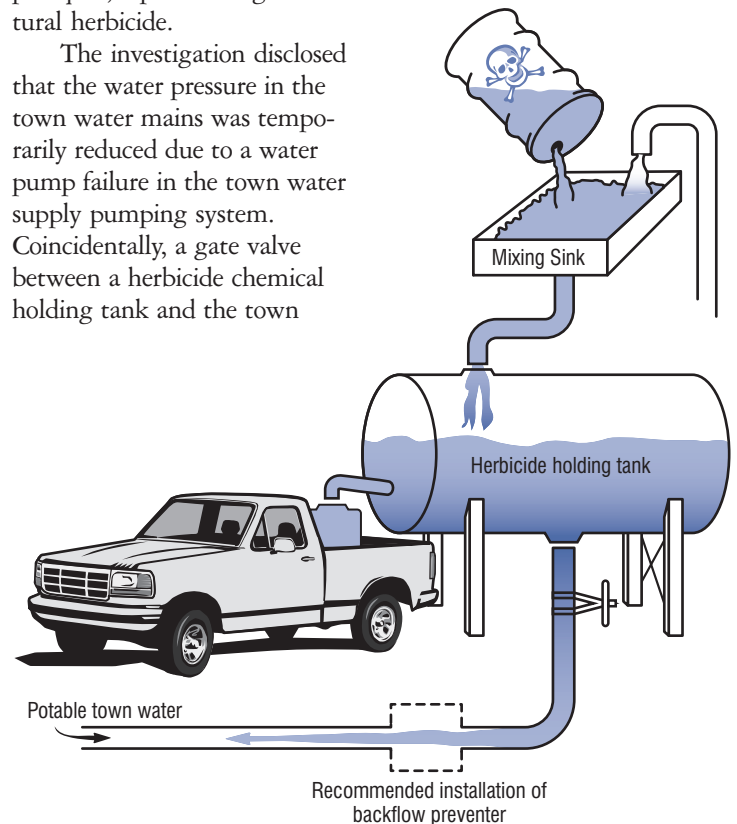
“Yellow gushy stuff” poured from some of the faucets in a small town in Maryland, and the State of Maryland placed a ban on drinking the water supply. Residents were warned not to use the water for cooking, bathing, drinking or any other purpose except for flushing toilets.

The incident drew widespread attention and made the local newspapers. In addition to being the lead story on the ABC news affiliate in Washington, D.C. and virtually all the Washington/Baltimore newspapers that evening. The news media contended that lethal pesticides may have contaminated the water supply and among the contaminants was paraquat, a powerful agricultural herbicide.

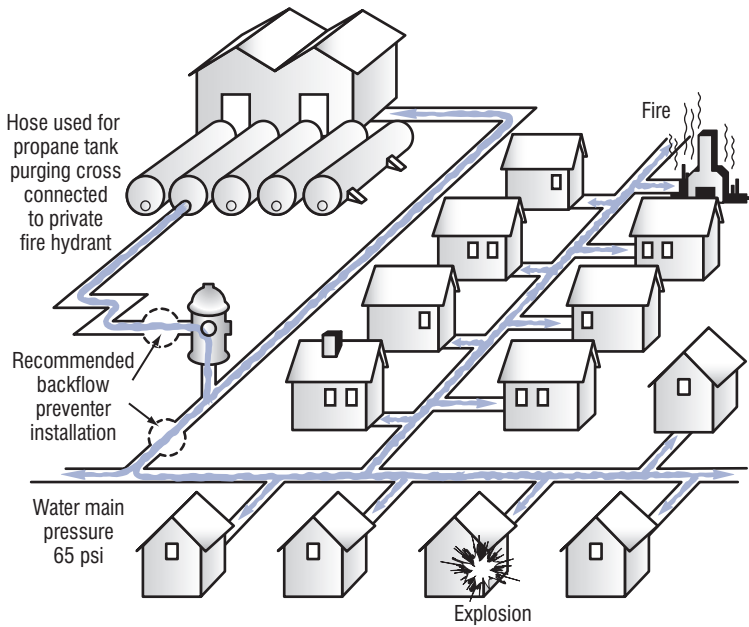
The investigation disclosed that the water pressure in the town water mains was temporarily reduced due to a water pump failure in the town water supply pumping system. Coincidentally, a gate valve between a herbicide chemical holding tank and the town

water supply piping had been left open. A lethal cross-connection had been created that permitted the herbicide to flow into the potable water supply system. Upon restoration of water pressure, the herbicides flowed into the many faucets and outlets on the town water distribution system.

This cross-connection created a needless and costly event that fortunately did not result in serious illness or loss of life. Door-to-door public notification, extensive flushing, water sample analysis, emergency arrangements to provide temporary potable water from tanker trucks, all contributed to an expensive and unnecessary town burden.



Propane Gas in the Water Mains



Hundreds of people were evacuated from their homes and businesses on an August afternoon in a town in Connecticut in 1982 as a result of propane entering the city water supply system. Fires were reported in two homes and the town water supply was contaminated. One five-room residence was gutted by a blaze resulting from propane gas “bubbling and hissing” from a bathroom toilet and in another home a washing machine explosion blew a woman against a wall. Residents throughout the area reported hissing, bubbling noises, coming from washing machines, sinks and toilets. Faucets sputtered out small streams of water mixed with gas and residents in the area were asked to evacuate their homes.

This near-disaster occurred in one, 30,000 gallon capacity liquid propane tank when the gas company initiated immedi-

ate repair procedures. To start the repair, the tank was “purged” of residual propane by using water from one of two private fire hydrants located on the property. Water purging is the preferred method of purging over the use of carbon dioxide since it is more positive and will float out any sludge as well as any gas vapors. The “purging” consisted of hooking up a hose to one of the private fire hydrants located on the property and initiating flushing procedures.

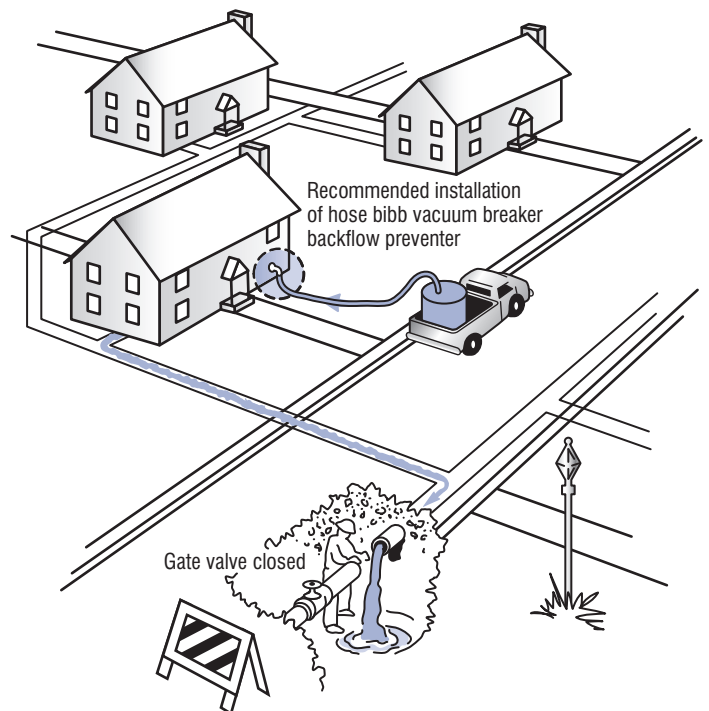
Since the vapor pressure of the propane residual in the tank was 85 to 90 psi., and the water pressure was only 65 to 70 psi., propane gas backpressure backflowed into the water main. It was estimated that the gas flowed into the water mains for about 20 minutes and that about 2,000 cubic feet of gas was involved. This was approximately enough gas to fill one mile of an 8-inch water main.

Chlordane and Heptachlor at the Housing Authority

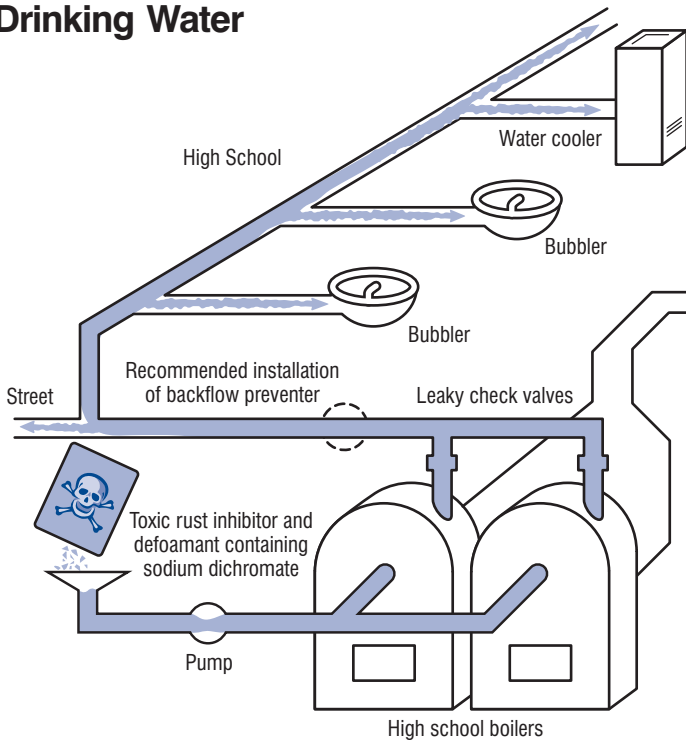
The services to seventy five apartments housing approximately three hundred people were contaminated with chlordane and heptachlor in a city in Pennsylvania, in December, 1980. The insecticides entered the water supply system while an exterminating company was applying them as a preventative measure against termites. While the pesticide contractor was mixing the chemicals in a tank truck with water from a garden hose coming from one of the apartments, a workman was cutting into a 6-inch main line to install a gate valve. The end of the garden hose was submerged in the tank containing the pesticides, and at the same time, the water to the area was shut off and the lines being drained prior to the installation

of the gate valve. When the workman cut the 6-inch line, water started to drain out of the cut, thereby setting up a backsiphonage condition. As a result, the chemicals were siphoned out of the truck, through the garden hose, and into the system, contaminating the seventy five apartments.

Repeated efforts to clean and flush the lines were not satisfactory and it was finally decided to replace the water line and all the plumbing that was affected. There were no reports of illness, but residents of the housing authority were told not to use any tap water for any purpose and they were given water that was trucked into the area by volunteer fire department personnel. They were without their normal water supply for 27 days.



Boiler Water Enters High School Drinking Water



A high school in New Mexico, was closed for several days in June 1984 when a home economics teacher noticed the water in the potable system was yellow. City chemists determined that samples taken contained levels of chromium as high as 700 parts per million, “astronomically higher than the accepted levels of .05 parts per million.” The head chemist said that it was miraculous that no one was seriously injured or killed by the high levels of chromium. The chemical was identified as sodium dichromate, a toxic form of chromium used in heating system boilers to inhibit corrosion of the metal parts.

No students or faculty were known to have consumed any of the water; however, area physicians and hospitals advised that if anyone had consumed those high levels of chromium, the symptoms would be nausea, diarrhea, and burning of the mouth and throat. Fortunately, the home economics teacher, who first saw the discolored water before school started, immediately covered all water fountains with towels so that no one would drink the water.

Investigation disclosed that chromium used in the heating system boilers to inhibit corrosion of metal parts entered the potable water supply system as a result of backflow through leaking check valves on the boiler feed lines.

Pesticide in Drinking Water

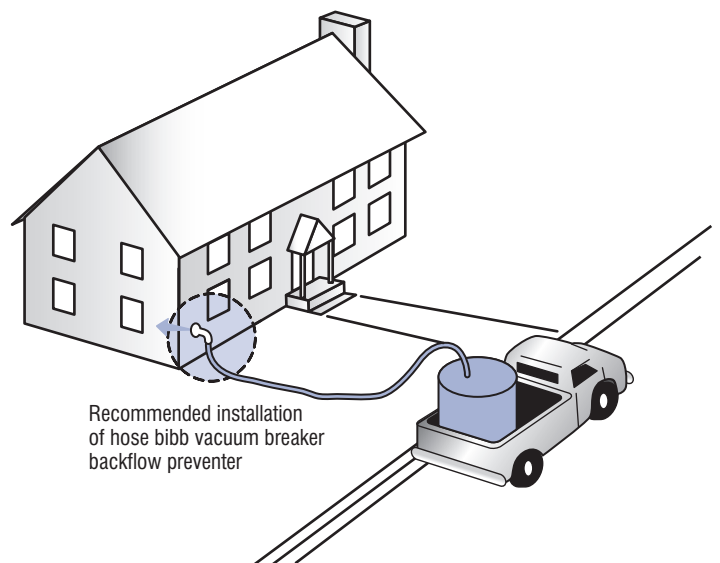
A pesticide contaminated a North Carolina water system in April, 1986, prompting the town to warn residents of 23 households not to drink the water. The residents in the affected area were supplied drinking water from a tank truck parked in the parking lot of a downtown office building until the condition could be cleared up. Residents complained of foul smelling water but there were no reports of illness from ingesting the water that had been contaminated with a pesticide containing chlordane and heptachlor.

Authorities stated that the problem occurred when a water main broke at the same time that a pest control service was filling a pesticide truck with water. The reduction in pressure caused the pesticide from inside the tank to be sucked into the building’s water main. The pesticide contaminated the potable water supply of the office building and neighborhood area.

Car Wash Water in the Water Main Street

This car wash cross-connection and back-pressure incident, which occurred in February, 1979, in the state of Washington, resulted in backflow chemical contamination of approximately 100 square blocks of water mains. Prompt response by the water department prevented a potentially hazardous water quality degradation problem without a recorded case of illness.

Numerous complaints of grey-green and “slippery” water were received by the water department coming from the same general area of town. A sample brought to the water department by a customer confirmed the reported problem and preliminary analysis indicated contamination with what appeared to be a detergent solution. While emergency crews initiated flushing operations, further investigation within the contaminated area signaled the problem was probably caused by a car wash,



Shipyards Backflow Contamination

or laundry, based upon the soapy nature of the contaminant. The source was quickly narrowed down to a car wash and the proprietor was extremely cooperative in admitting to the problem and explaining how it had occurred. The circumstances leading up to the incident were as follows:

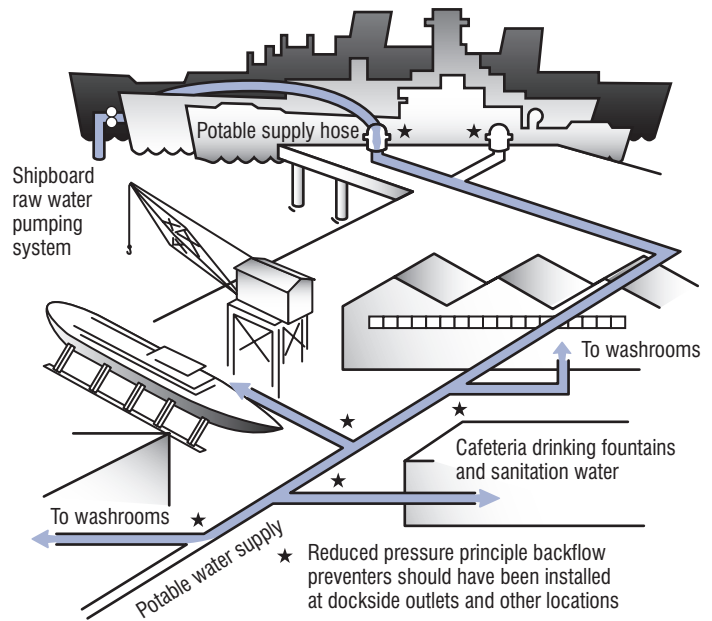
- On Saturday, February 10, 1979, a high pressure pump broke down at the car wash. This pump recycled reclaimed wash and rinse water and pumped it to the initial scrubbers of the car wash. No potable plumbing connection is normally made to the car wash's scrubber system.

- After the pump broke down, the car wash owner was able to continue operation by connecting a 2-inch hose section temporarily between the potable supply within the car wash, and the scrubber cycle piping.

- On Monday, February 12, 1979, the owner repaired the high pressure pump and resumed normal car wash operations. The 2-inch hose connection (cross-connection) was not removed!

- Because of the cross-connection, the newly repaired high pressure pump promptly pumped a large quantity of the reclaimed wash/rinse water out of the car wash and into a 12-inch water main in the street. This in turn was delivered to the many residences and commercial establishments connected to the water main.

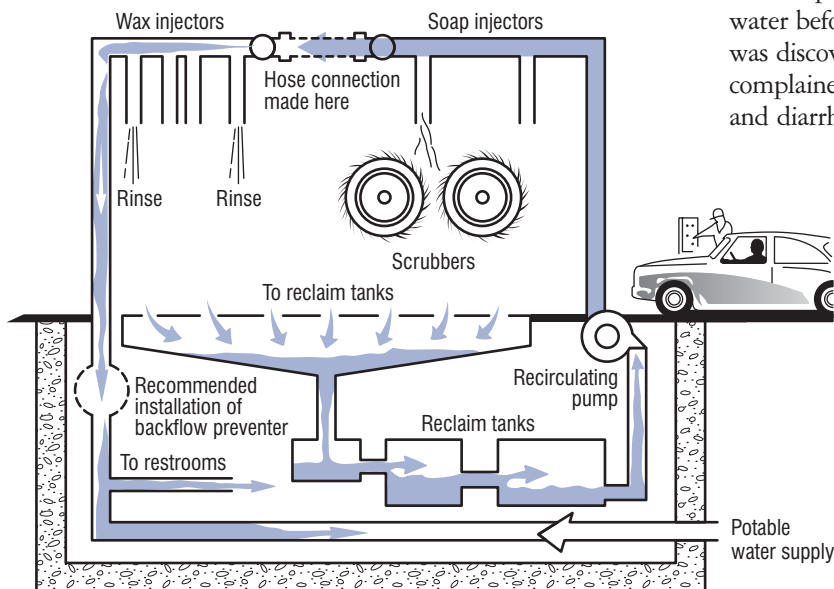
Within 24 hours of the incident, the owner of the car wash had installed a 2-inch reduced pressure principle backflow preventer on his water service and all car wash establishments in Seattle that used a wash water reclaim system were notified of the state requirement for backflow prevention.



Water fountains at an East Coast Shipyards were posted "No Drinking" as workers flushed the water lines to eliminate raw river water that had entered the shipyard following contamination from incorrectly connected water lines between ships at the pier and the shipyard. Some third shift employees drank the water before the pollution was discovered and later complained of stomach cramps and diarrhea.

The cause of the problem was a direct cross-connection between the on-board salt water fire protection water system and the fresh water connected to one of the ships at the dock. While the shipyard had been aware of the need for backflow protection at the dockside tie up area, the device had not been delivered and installed prior to the time of the incident. As a result, the salt water on-board fire protection system, being at a greater pressure than the potable supply, forced the salt water, through backpressure, into the shipyard potable supply.

Fortunately, a small demand for potable water at the time of the incident prevented widespread pollution in the shipyard and the surrounding areas.



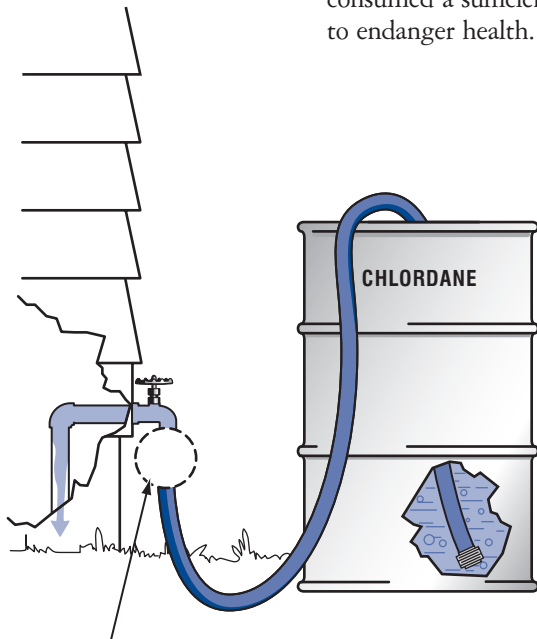
Chlordane in the Water Main

In October, 1979, approximately three gallons of chlordane, a highly toxic insecticide, was sucked back (back-siphoned) into the water system of a residential area of a good sized eastern city. Residents complained that the water “looked milky, felt greasy, foamed and smelled,” and as one woman put it, “It was similar to a combination of kerosene and Black Flag pesticide.”

The problem developed while water department personnel were repairing a water main. A professional exterminator, meanwhile, was treating a nearby home with chlordane for termite elimination. The workman for the exterminator company left one

end of a garden hose that was connected to an outside hose bibb tap in a barrel of diluted pesticide. During the water service interruption, the chlordane solution was back-siphoned from the barrel through the house and into the water mains.

Following numerous complaints, the water department undertook an extensive program of flushing of the water mains and hand delivered letters telling residents to flush their lines for four hours before using the water. Until the water lines were clear of the contaminant, water was hand-hauled into homes, and people went out of their homes for showers, meals and every other activity involving potable water. Fortunately, due to the obvious bad taste, odor and color of the contaminated water, no one consumed a sufficient quantity to endanger health.



Recommended installation of hose bibb vacuum breaker backflow preventer

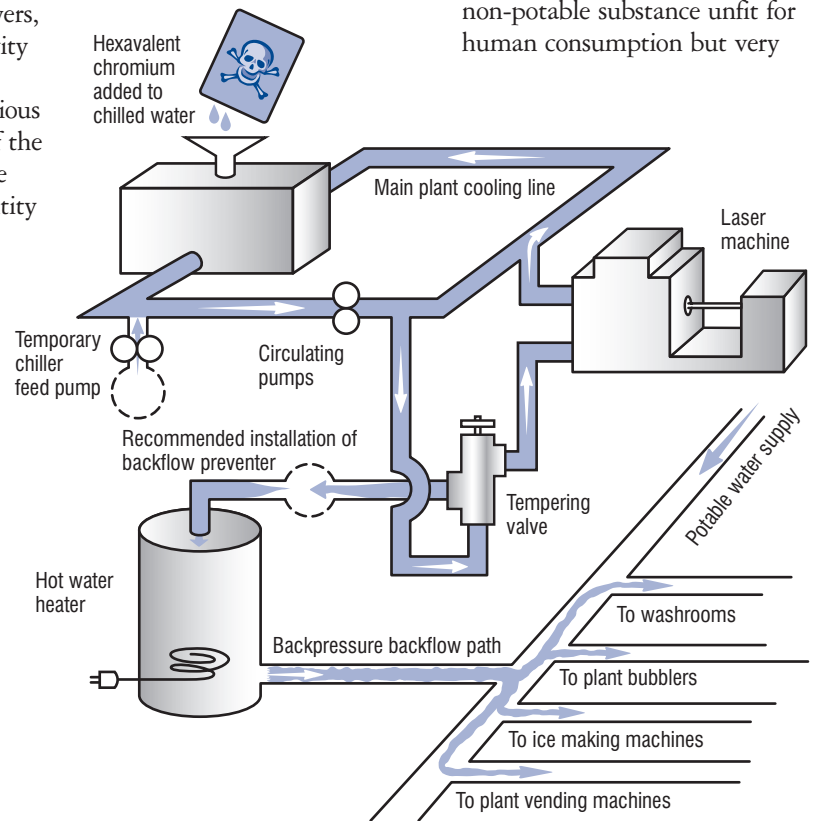
Hexavalent Chromium in Drinking Water

In July, 1982, a well meaning maintenance mechanic, in attempting to correct a fogging lens in an overcooled laser machine, installed a tempering valve in the laser cooling line, and inadvertently set the stage for a backpressure backflow incident that resulted in hexavalent chromium contaminating the potable water of a large electronic manufacturing company in Massachusetts employing 9,000 people. Quantities of 50 parts per million hexavalent chromium were found in the drinking water which is sufficient to cause severe vomiting, diarrhea,

and intestinal sickness. Maintenance crews working during the plant shutdown were able to eliminate the cross-connection and thoroughly flush the potable water system, thereby preventing a serious health hazard from occurring.

The incident occurred as follows:

- Laser machine lenses were kept cool by circulating chilled water that came from a large refrigeration chiller. The water used in the chiller was treated with hexavalent chromium, a chemical additive used as an anticorrosive agent and an algicide. As a result, the chilled water presented a toxic, non-potable substance unfit for human consumption but very



Employee Health Problems due to Cross-Connection

acceptable for industrial process water. No health hazard was present as long as the piping was identified, kept separate from potable drinking water lines, and not cross-connected to the potable water supply.

- A maintenance mechanic correctly reasoned that by adding a tempering valve to the chilled water line, he could heat up the water a bit and eliminate fogging of the laser lenses resulting from the chilled water being too cold. The problem with the installation of the tempering valve was that a direct cross-connection had been inadvertently made between the toxic chilled water and the potable drinking water line!

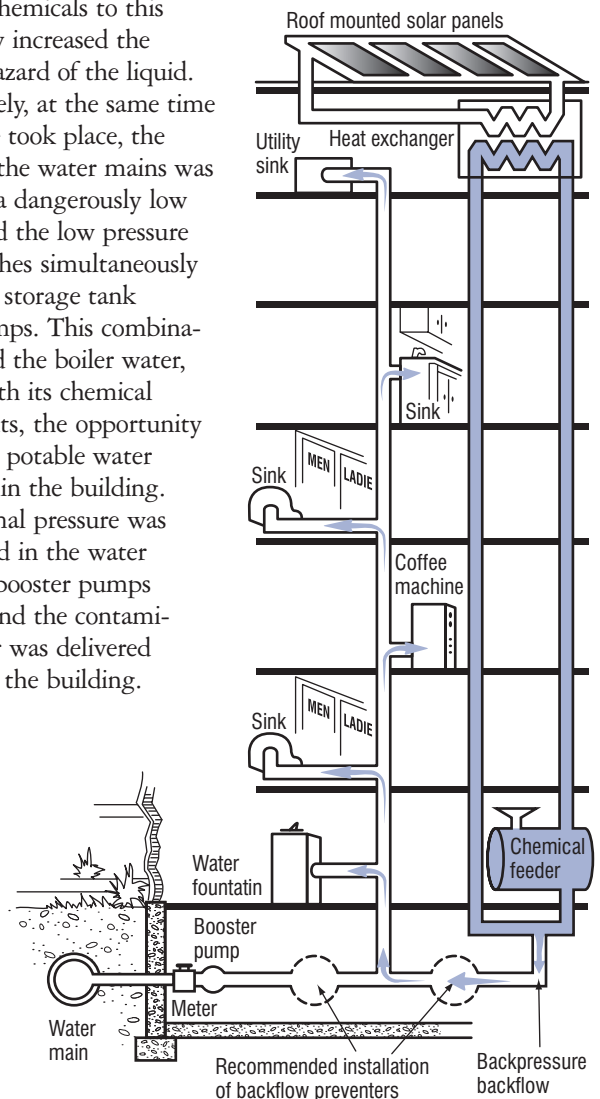
- Periodic maintenance to the chiller system was performed in the summer, requiring that an alternate chiller feed pump be temporarily installed. This replacement pump had an outlet pressure of 150 psi, and promptly established an imbalance of pressure at the tempering valve, thereby over-pressurizing the 60 psi, potable supply. Backpressure backflow resulted and pushed the toxic chilled water from the water heater and then into the plant's potable drinking water supply. Yellowish green water started pouring out of the drinking fountains, the washroom, and all potable outlets.

A cross-connection incident occurring in a modern seven-story office building located in a large city in New Hampshire, in March, 1980, resulted in numerous cases of nausea, diarrhea, loss of time and employee complaints as to the poor quality of the water.

On Saturday, March 1, 1980, a large fire occurred two blocks away from a seven-story office building in this large New Hampshire city. On Sunday, March 2, 1980, the maintenance crew of the office building arrived to perform the weekly cleaning, and after drinking the water from the drinking fountains, and sampling the coffee from the coffee machines, noticed that the water smelled rubbery and had a strong bitter taste. Upon notifying the Manchester Water Company, water samples were taken and preliminary analysis disclosed that the contaminants found were not the typical contaminants associated with fire line disturbances. Investigating teams suspected that either the nearby fire could have siphoned contaminants from adjacent buildings into the water mains, or the contamination could have been caused by a plumbing deficiency occurring within the seven story building itself.

Water pH levels of the building water indicated that an injection of chemicals had probably taken place within the seven-story building. Tracing of the water lines within the building pinpointed a 10,000 gallon hot-water storage tank that was used for heat storage in the solar heating system. It did not have any backflow protection on the make-up

supply line! As the storage tank pressure increased above the supply pressure, as a result of thermal expansion, the potential for backpressure backflow was present. Normally, this would not occur because a boost pump in the supply line would keep the supply pressure to the storage tank always greater than the highest tank pressure. The addition of rust inhibiting chemicals to this tank greatly increased the degree of hazard of the liquid. Unfortunately, at the same time that the fire took place, the pressure in the water mains was reduced to a dangerously low pressure and the low pressure cutoff switches simultaneously shut off the storage tank booster pumps. This combination allowed the boiler water, together with its chemical contaminants, the opportunity to enter the potable water supply within the building. When normal pressure was reestablished in the water mains, the booster pumps kicked in, and the contaminated water was delivered throughout the building.



Dialysis Machine Contamination

Ethylene glycol, an anti-freeze additive to air conditioning cooling tower water, inadvertently entered the potable water supply system in a medical center in Illinois in September, 1982, and two of six dialysis patients succumbed as a direct or indirect result of the contamination.

The glycol was added to the air conditioning water, and the glycol/water mix was stored in a holding tank that was an integral part of the medical center's air conditioning cooling system. Pressurized make-up water to the holding tank was supplied by a medical center

potable supply line and fed through a manually operated control valve. With this valve open, or partially open, potable make-up water flowed slowly into the glycol/water mixture in the holding tank until it filled to the point where the pressure in the closed tank equaled the pressure in the potable water supply feed line. As long as the potable feed line pressure was at least equal to, or greater than, the holding tank pressure, no backflow could occur. The stage was set for disaster, however.

It was theorized that someone in the medical center flushed a toilet or turned on a

faucet, which in turn dropped the pressure in the potable supply line to the air conditioning holding tank. Since the manually operated fill valve was partially open, this allowed the glycol/water mixture to enter the medical center potable pipelines and flow into the dialysis equipment. The dialysis filtration system takes out trace chemicals such as those used in the city water treatment plant, but the system could not handle the heavy load of chemicals that it was suddenly subjected to.

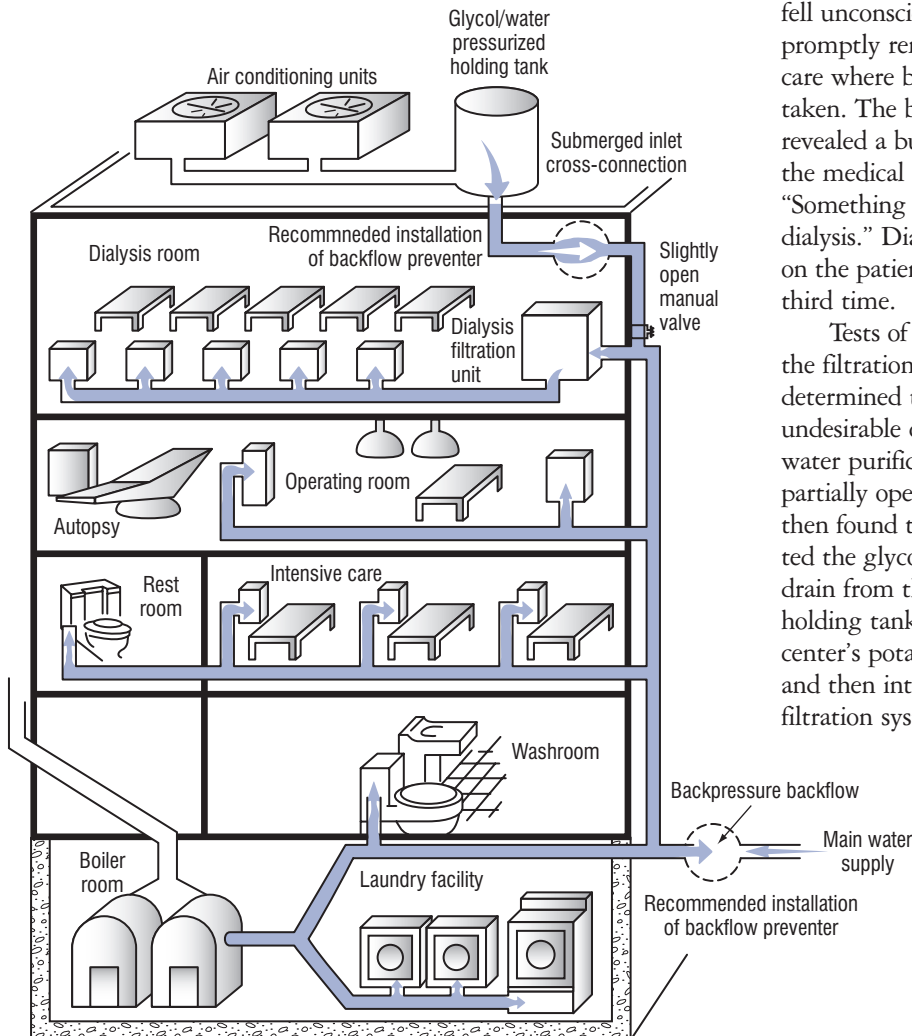
The effect upon the dialysis patients was dramatic: patients became drowsy, confused and fell unconscious, and were promptly removed to intensive care where blood samples were taken. The blood samples revealed a build-up of acid and the medical director stated that, "Something has happened in dialysis." Dialysis was repeated on the patients a second and third time.

Tests of the water supply to the filtration system quickly determined the presence of "an undesirable chemical in the water purification system." The partially open fill valve was then found that it had permitted the glycol water mix to drain from the air conditioning holding tank into the medical center's potable supply lines and then into the dialysis filtration system equipment.

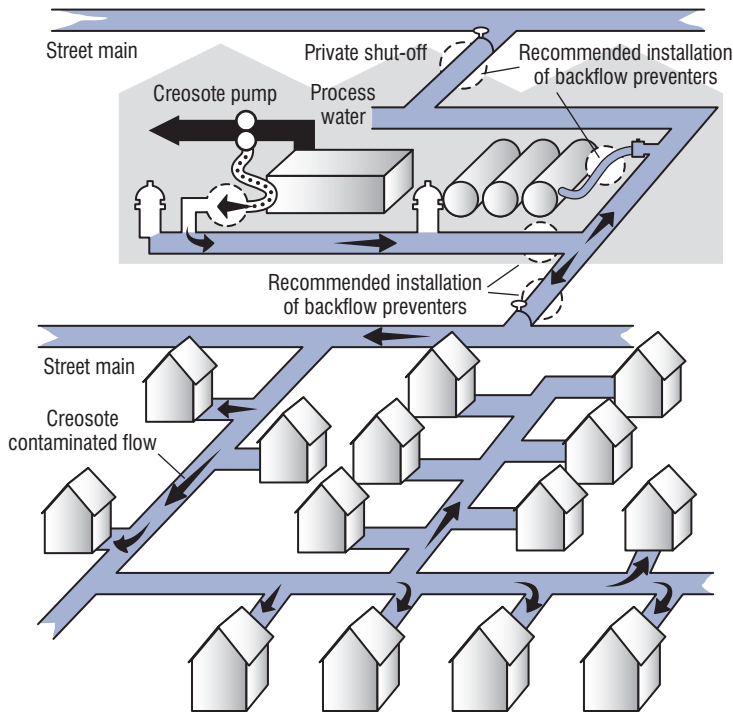
Creosote in the Water Mains

Creosote entered the water distribution system of a southeastern county water authority in Georgia, in November, 1984, as a result of cross-connection between a $\frac{3}{4}$ -inch hose that was being used as a priming line between a fire service connection and the suction side of a creosote pump. The hose continually supplied water to the pump to ensure the pump was primed at all times. However, while repairs were being made to a private fire hydrant, the creosote back-siphoned into the water mains and contaminated a section of the water distribution system.

Detailed investigation of the cause of the incident disclosed that the wood preservative company, as part of their operation, pumped creosote from collective pits to other parts of their operation. The creosote pump would automatically shut off when the creosote in the pit was lowered to a predetermined level. After the creosote returned to a higher level, the pump would restart. This pump would lose its prime quite often prior to the pit refilling, and to prevent the loss of prime, the wood preservative company would connect a hose from a $\frac{3}{4}$ -inch hose bibb, located on the fire service line, to the suction side of the pump. The hose bibb remained open at all times in an effort to continuously keep the pump primed.



Kool-Aid Laced With Chlordane

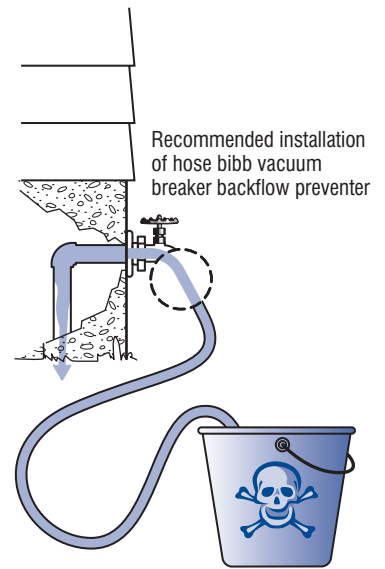


Repairs were necessary to one of the private fire hydrants on the wood preservative company property, necessitating the shutting down of one of two service lines and removal of the damaged fire hydrant for repair. Since the hydrant was at a significantly lower level than the creosote pit, the creosote back-siphoned through a $\frac{3}{4}$ -inch pump priming hose connecting the creosote pit to the fire service line.

After the repairs were made to the hydrant, and the water service restored, the creosote, now in the fire lines, was forced into the main water distribution system.

In August, 1978, a professional exterminator was treating a church located in a small town in South Carolina, for termite and pest control. The highly toxic insecticide chlordane was being mixed with water in small buckets, and garden hoses were left submerged in the buckets while the mixing was being accomplished. At the same time, water department personnel came by to disconnect the parsonage's water line from the church to install a separate water meter for the parsonage. In the process, the water was shut off in the area of the church building. Since the church was located on a steep hill, and as the remaining water in the lines was used by residents in the area, the church was among the first places to experience a negative pressure.

The chlordane was quickly siphoned into the water lines within the church and became mixed with the Kool-Aid being prepared by women for the vacation bible school. Approximately a dozen children and three adults experienced dizziness and nausea. Fortunately, none required hospitalization or medical attention.



Theory of Backflow and Backsiphonage

A cross-connection¹ is the link or channel connecting a source of pollution with a potable water supply. The polluting substance, in most cases a liquid, tends to enter the potable supply if the net force acting upon the liquid acts in the direction of the potable supply. Two factors are therefore essential for backflow. First, there must be a link between the two systems. Second, the resultant force must be toward the potable supply.

An understanding of the principles of backflow and backsiphonage requires an understanding of the terms frequently used in their discussion. *Force*, unless completely resisted, will produce motion. Weight is a type of force resulting from the earth's gravitational attraction. Pressure (P) is a force-per-unit area, such as pounds per square inch (psi). *Atmospheric pressure* is the pressure exerted by the weight of the atmosphere above the earth.

Pressure may be referred to using an absolute scale, pounds per square inch absolute (psia), or gage scale, pounds per square inch gage (psig). Absolute pressure and gage pressure are related. Absolute pressure is equal to the gage pressure plus the atmospheric pressure. At sea level the atmospheric pressure is 14.7 psia. Thus,

$$P_{\text{absolute}} = P_{\text{gage}} + 14.7 \text{ psi}$$

or

$$P_{\text{gage}} = P_{\text{absolute}} - 14.7 \text{ psi}$$

In essence then, absolute pressure is the total pressure. Gage pressure is simply the pressure read on a gage. If there is no pressure on the gage other than atmospheric, the gage would read zero. Then the absolute pressure would be equal to 14.7 psi which is the atmospheric pressure.

The term *vacuum* indicates that the absolute pressure is less than the atmospheric pressure and that the gage pressure is negative. A complete or total vacuum would mean a pressure of 0 psia or -14.7 psig. Since it is impossible to produce a total vacuum, the term vacuum, as used in the text, will mean all degrees of partial vacuum. In a partial vacuum, the pressure would range from slightly less than 14.7 psia (0 psig) to slightly greater than 0 psia (-14.7 psig).

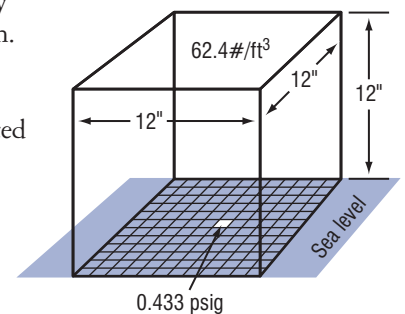
*Backsiphonage*¹ results in fluid flow in an undesirable or reverse direction. It is caused by atmospheric pressure exerted on a pollutant liquid forcing it toward a potable water supply system that is under a vacuum. Backflow, although literally meaning any type of reversed flow, refers to the flow produced by the differential pressure existing between two systems both of which are at pressures greater than atmospheric.

Water Pressure

For an understanding of the nature of pressure and its relationship to water depth, consider the pressure exerted on the base of a cubic foot of water at sea level. (See Fig. 1) The average weight of a cubic foot of water is 62.4 pounds per square foot gage. The base may be subdivided into 144-square inches with each subdivision being subjected to a pressure of 0.433 psig.

Suppose another cubic foot of water were placed directly on top of the first (See Fig. 2). The pressure on the top surface of the first cube which was originally atmospheric, or 0 psig, would now be 0.433 psig as a result of the super-imposed cubic foot of water. The pressure of the base of the first cube would also be increased by the same amount of 0.866 psig, or two times the original pressure.

FIGURE 1. Pressure exerted by 1 foot of water at sea level.

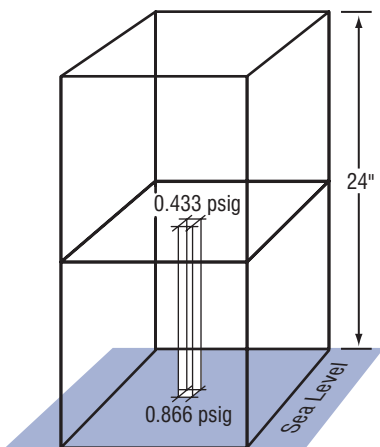


¹See formal definition in the glossary of the appendix

If this process were repeated with a third cubic foot of water, the pressures at the base of each cube would be 1,299 psig, 0.866 psig, and 0.433 psig, respectively. It is evident that pressure varies with depth below a free water surface; in general each foot of elevation change, within a liquid, changes the pressure by an amount equal to the weight-per-unit area of 1 foot of the liquid. The rate of increase for water is 0.433 psi per foot of depth.

Frequently water pressure is referred to using the terms “pressure head” or just “head,” and is expressed in units of feet of water. One foot of head would be equivalent to the pressure produced at the base of a column of water 1 foot in depth. One foot of head or 1 foot of water is equal to 0.433 psig. One hundred feet of head is equal to 43.3 psig.

FIGURE 2. Pressure exerted by 2 feet of water at sea level.

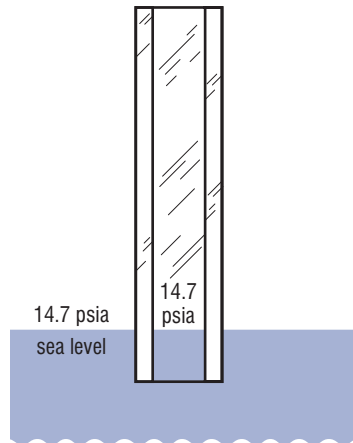


¹See formal definition in the glossary of the appendix

Siphon Theory

Figure 3 depicts the atmospheric pressure on a water surface at sea level. An open tube is inserted vertically into the water; atmospheric pressure, which is 14.7 psia, acts equally on the surface of the water within the tube and on the outside of the tube.

FIGURE 3. Pressure on the free surface of a liquid at sea level.

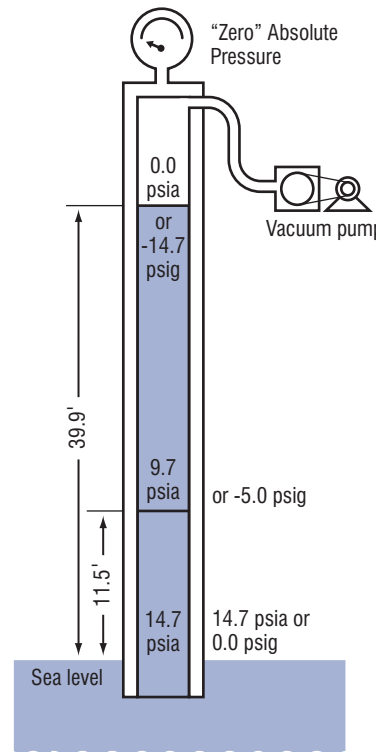


If, as shown in Figure 4, the tube is slightly capped and a vacuum pump is used to evacuate all the air from the sealed tube, a vacuum with a pressure of 0 psia is created within the tube. Because the pressure at any point in a static fluid is dependent upon the height of that point above a reference line, such as sea level, it follows that the pressure within the tube at sea level must still be 14.7 psia. This is equivalent to the pressure at the base of a column of water 33.9 feet high and with the column open at the base, water would rise to fill the column to a depth of 33.9 feet. In other words, the weight of the atmosphere at sea

level exactly balances the weight of a column of water 33.9 feet in height. The absolute pressure within the column of water in Figure 4 at a height of 11.5 feet is equal to 9.7 psia. This is a partial vacuum with an equivalent gage pressure of -5.0 psig.

As a practical example, assume the water pressure at a closed faucet on the top of a 100-foot high building to be 20 psig; the pressure on the ground floor would then be 63.3 psig. If the pressure at the ground were to drop suddenly due to a heavy fire demand in the area to 33.3 psig, the pressure at the top would be reduced to -10 psig. If the building water system were airtight, the water would remain at the level of the faucet

FIGURE 4. Effect of evacuating air from a column.



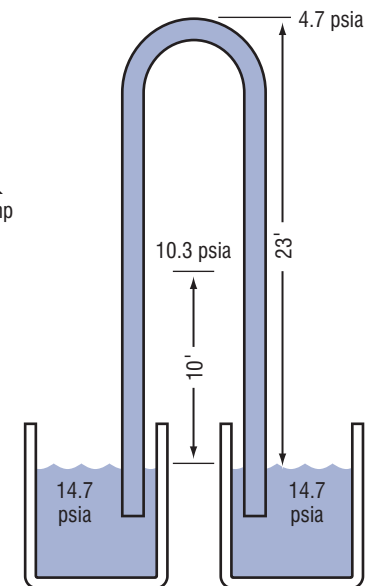
because of the partial vacuum created by the drop in pressure. If the faucet were opened, however, the vacuum would be broken and the water level would drop to a height of 77 feet above the ground. Thus, the atmosphere was supporting a column of water 23 feet high.

Figure 5 is a diagram of an inverted U-tube that has been filled with water and placed in two open containers at sea level.

If the open containers are placed so that the liquid levels in each container are at the same height, a static state will exist; and the pressure at any specified level in either leg of the U-tube will be the same.

The equilibrium condition is altered by raising one of the containers so that the liquid level in one container is 5 feet

FIGURE 5. Pressure relationships in a continuous fluid system at the same elevation.



above the level of the other. (See Fig. 6.) Since both containers are open to the atmosphere, the pressure on the liquid surfaces in each container will remain at 14.7 psia.

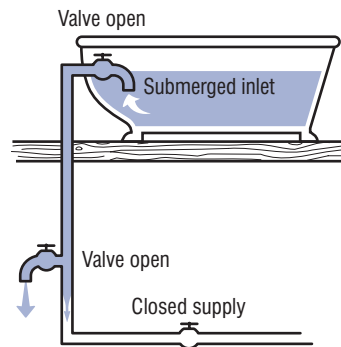
If it is assumed that a static state exists, momentarily, within the system shown in Figure 6, the pressure in the left tube at any height above the free surface in the left container can be calculated. The pressure at the corresponding level in the right tube above the free surface in the right container may also be calculated.

As shown in Figure 6, the pressure at all levels in the left tube would be less than at corresponding levels in the right tube. In this case, a static condition cannot exist because fluid will flow from the higher pressure to the lower pressure; the flow would be from the right tank to the left tank. This arrangement will be recognized as a siphon. The crest of a siphon cannot be higher than 33.9 feet above the upper liquid

level, since atmosphere cannot support a column of water greater in height than 33.9 feet.

Figure 7 illustrates how this siphon principle can be hazardous in a plumbing system. If the supply valve is closed, the pressure in the line supplying the faucet is less than the pressure in the supply line to the bathtub. Flow will occur, therefore, through siphonage, from the bathtub to the open faucet.

FIGURE 7. Backsiphonage in a plumbing system.

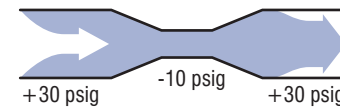


The siphon actions cited have been produced by reduced pressures resulting from a difference in the water levels at two separated points within a continuous fluid system.

Reduced pressure may also be created within a fluid system as a result of fluid motion. One of the basic principles of fluid mechanics is the principle of conservation of energy. Based upon this principle, it may be

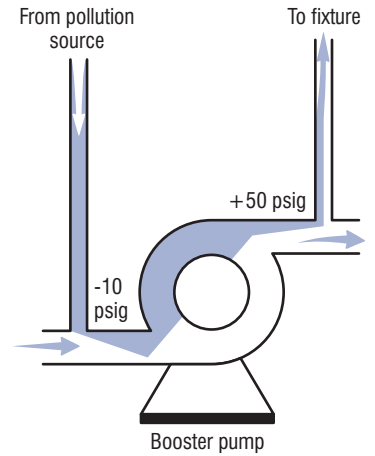
shown that as a fluid accelerates, as shown in Figure 8, the pressure is reduced. As water flows through a constriction such as a converging section of pipe, the velocity of the water increases; as a result, the pressure is reduced. Under such conditions, negative pressures may be developed in a pipe. The simple aspirator is based upon this principle. If this point of reduced pressure is linked to a source of pollution, backsiphonage of the pollutant can occur.

FIGURE 8. Negative pressure created by constricted flow.



One of the common occurrences of dynamically reduced pipe pressures is found on the suction side of a pump. In many cases similar to the one illustrated in Figure 9, the line supplying the booster pump is undersized or does not have sufficient pressure to deliver water at the rate at which the pump normally operates. The rate of flow in the pipe may be increased by a further reduction in pressure at the pump intake. This often results in the creation of negative pressure at the pump intake. This often results in the creation of negative pressure. This negative pressure may become low enough in some cases to cause vaporization of the water in the line. Actually, in the illustration shown,

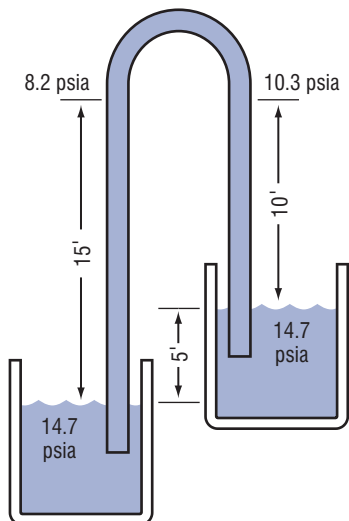
FIGURE 9. Dynamically reduced pipe pressures.



flow from the source of pollution would occur when pressure on the suction side of the pump is less than pressure of the pollution source; but this is *backflow*, which will be discussed below.

The preceding discussion has described some of the means by which negative pressures may be created and which frequently occur to produce backsiphonage. In addition to the negative pressure or reversed force necessary to cause backsiphonage and backflow, there must also be the cross-connection or connecting link between the potable water supply and the source of pollution. Two basic types of connections may be created in piping systems. These are the solid pipe with valved connection and the *submerged inlet*.

FIGURE 6. Pressure relationships in a continuous fluid system at different elevations.



Figures 10 and 11 illustrate solid connections. This type of connection is often installed where it is necessary to supply an auxiliary piping system from the potable source. It is a direct connection of one pipe to another pipe or receptacle.

Solid pipe connections are often made to continuous or intermittent waste lines where it is assumed that the flow will be in one direction only. An example of this would be used cooling water from a water jacket or condenser as shown in Figure 11. This type of connection is usually detectable but creating a concern on the part

of the installer about the possibility of reversed flow is often more difficult. Upon questioning, however, many installers will agree that the solid connection was made because the sewer is occasionally subjected to backpressure.

Submerged inlets are found on many common plumbing fixtures and are sometimes necessary features of the fixtures if they are to function properly. Examples of this type of design are siphon-jet urinals or water closets, flushing rim slop sinks, and dental cuspidors. Oldstyle bathtubs and lavatories had supply inlets below the flood level rims, but modern sanitary design has minimized or eliminated this hazard in new fixtures. Chemical and industrial process vats sometimes have submerged inlets where the water pressure is used as an aid in diffusion, dispersion and agitation of the vat contents. Even though the supply pipe may come from the floor above the vat, backsiphonage can occur as it has been shown that the siphon action can raise a liquid such as water almost 34 feet. Some submerged inlets

difficult to control are those which are not apparent until a significant change in water level occurs or where a supply may be conveniently extended below the liquid surface by means of a hose or auxiliary piping. A submerged inlet may be created in numerous ways, and its detection in some of these subtle forms may be difficult.

The illustrations included in part B of the appendix are intended to describe typical examples of backsiphonage, showing in each case the nature of the link or cross-connection, and the cause of the negative pressure.

Backflow

Backflow¹, as described in this manual, refers to reversed flow due to backpressure other than siphonic action. Any interconnected fluid systems in which the pressure of one exceeds the pressure of the other may have flow from one to the other as a result of the pressure differential. The flow will occur from the zone of higher pressure to the zone of lower pressure. This type of backflow is of concern in buildings where two or more piping systems are maintained. The potable water supply is usually under pressure directly from the city water main. Occasionally, a booster pump is used. The auxiliary system is often pressurized by a centrifugal pump, although backpressure may be caused by gas or steam pressure from a boiler. A

reversal in differential pressure may occur when pressure in the potable system drops, for some reason, to a pressure lower than that in the system to which the potable water is connected.

The most positive method of avoiding this type of backflow is the total or complete separation of the two systems. Other methods used involve the installation of mechanical devices. All methods require routine inspection and maintenance.

Dual piping systems are often installed for extra protection in the event of an emergency or possible mechanical failure of one of the systems. Fire protection systems are an example. Another example is the use of dual water connections to boilers. These installations are sometimes interconnected, thus creating a health hazard.

The illustrations in part C of the appendix depict installations where backflow under pressure can occur, describing the cross-connection and the cause of the reversed flow.

FIGURE 10.
Valved connections between potable water and nonpotable fluid.

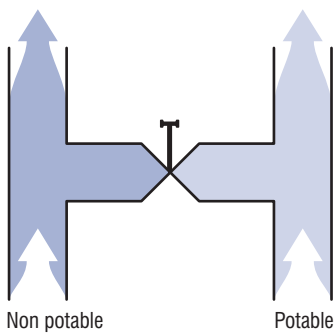
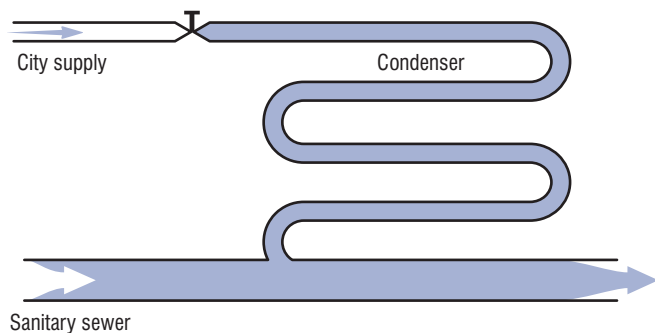


FIGURE 11
Valved connection between potable water and sanitary sewer.



¹See formal definition in the glossary of the appendix

Methods and Devices for the Prevention of Backflow and Back-Siphonage

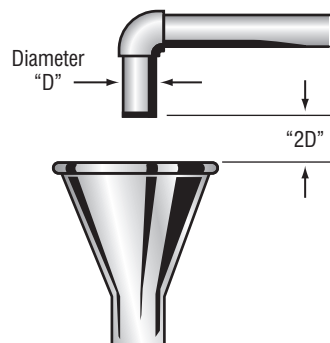
A wide choice of devices exists that can be used to prevent backsiphonage and backpressure from adding contaminated fluids or gases into a potable water supply system. Generally, the selection of the proper device to use is based upon the degree of hazard posed by the cross-connection. Additional considerations are based upon piping size, location, and the potential need to periodically test the devices to insure proper operation.

There are six basic types of devices that can be used to correct cross-connections: air gaps, barometric loops, vacuum breakers—both atmospheric and pressure type, double check with intermediate atmospheric vent, double check valve assemblies, and reduced pressure principle devices. In general, all manufacturers of these devices, with the exception of the barometric loop, produce them to one or more of three basic standards, thus insuring the public that dependable devices are being utilized and marketed. The major standards in the industry are: American Society of Sanitary Engineers ASSE), American Water Works Association (AWWA), and the University of California Foundation for Cross-Connection Control and Hydraulic Research.

Air Gap

Air gaps are non-mechanical backflow preventers that are very effective devices to be used where either backsiphonage or backpressure conditions may exist. Their use is as old as piping and plumbing itself, but only relatively recently have standards been issued that standardize their design. In general, the air gap must be twice the supply pipe diameter but never less than one inch. See Figure 12.

FIGURE 12. Air gap.



An air gap, although an extremely effective backflow preventer when used to prevent backsiphonage and backpressure conditions, does interrupt the piping flow with corresponding loss of pressure for subsequent use. Consequently, air gaps are primarily used at end of the line service where reservoirs or storage tanks are desired. When contemplating the use of an air gap, some other considerations are:

(1) In a continuous piping system, each air gap requires the added expense of reservoirs and secondary pumping systems.

(2) The air gap may be easily defeated in the event that the “2D” requirement was purposely or inadvertently compromised. Excessive splash may be encountered in the event that higher than anticipated pressures or flows occur. The splash may be a cosmetic or true potential hazard—the simple solution being to reduce the “2D” dimension by thrusting the supply pipe into the receiving funnel. By so doing, the air gap is defeated.

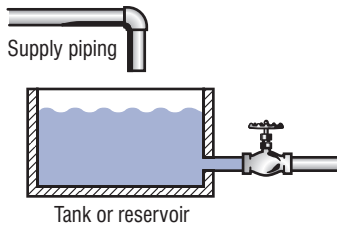
(3) At an air gap, we expose the water to the surrounding air with its inherent bacteria, dust particles, and other airborne pollutants or contaminants. In addition, the aspiration effect of the flowing water can drag down surrounding pollutants into the reservoir or holding tank.

(4) Free chlorine can come out of treated water as a result of the air gap and the resulting splash and churning effect as the water enters the holding tanks. This reduces the ability of the water to withstand bacteria contamination during long term storage.

(5) For the above reasons, air gaps must be inspected as frequently as mechanical backflow preventers. They are not exempt from an in-depth cross-connection control program requiring periodic inspection of all backflow devices.

Air gaps may be fabricated from commercially available plumbing components or purchased as separate units and integrated into plumbing and piping systems. An example of the use of an air gap is shown in Figure 13.

FIGURE 13.
Air gap in a piping system.



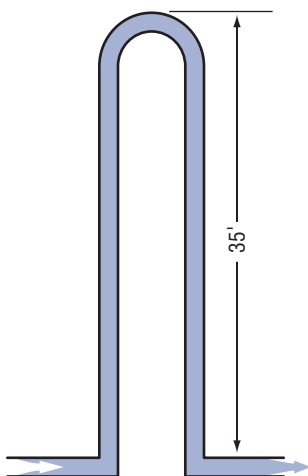
Barometric Loop

The barometric loop consists of a continuous section of supply piping that abruptly rises to a height of approximately 35 feet and then returns back down to the originating level. It is a loop in the piping system that effectively protects against backsiphonage. It may not be used to protect against backpressure.

Its operation, in the protection against backsiphonage, is based upon the principle that a water column, at sea level pressure, will not rise above 33.9 feet (Ref. Chapter 3, Fig. 4 Page 13).

In general, barometric loops are locally fabricated, and are 35 feet high.

FIGURE 14.
Barometric loop.



Atmospheric Vacuum Breaker

These devices are among the simplest and least expensive mechanical types of backflow preventers and, when installed properly, can provide excellent protection against backsiphonage. They must not be utilized to protect against backpressure conditions.

Construction consists usually of a polyethylene float which is free to travel on a shaft and seal in the uppermost position against atmosphere with an elastomeric disc. Water flow lifts the float, which then causes the disc to seal. Water pressure keeps the float in the upward sealed position. Termination of the water supply will cause the disc to drop down venting the unit to atmosphere and thereby opening downstream piping to atmospheric pressure, thus preventing backsiphonage. Figure 15 shows a typical atmospheric breaker.

In general, these devices are available in 1/2-inch through 3-inch size and must be installed vertically, must not have shutoffs downstream, and must be installed at least 6-inches higher than the final outlet. They cannot be tested once they are installed in the plumbing system, but are, for the most part, dependable, trouble-free devices for backsiphonage protection.

FIGURE 15.
Atmospheric vacuum breaker.

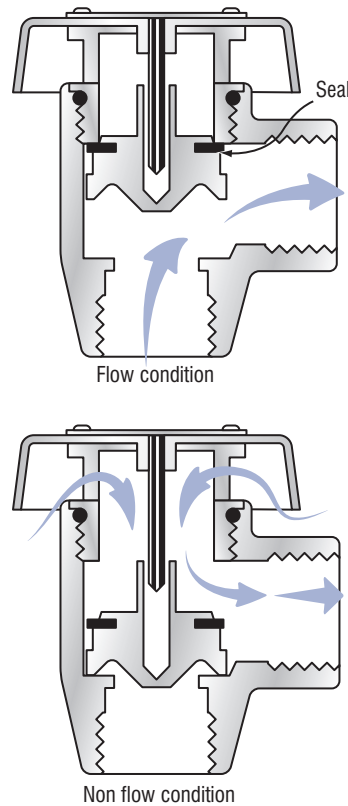


FIGURE 16.
Atmospheric vacuum breaker typical installation.

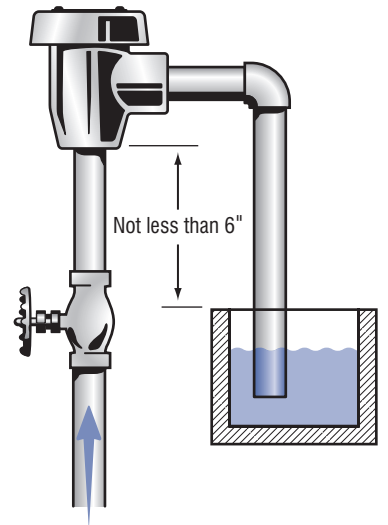


FIGURE 17.
Atmospheric vacuum breaker in plumbing supply system.



Figure 16 shows the generally accepted installation requirements—note that no shutoff valve is downstream of the device that would otherwise keep the atmospheric vacuum breaker under constant pressure.

Figure 17 shows a typical installation of an atmospheric vacuum breaker in a plumbing supply system.

Hose Bibb Vacuum Breakers

These small devices are a specialized application of the atmospheric vacuum breaker. They are generally attached to sill cocks and in turn are connected to hose supplied outlets such as garden hoses, slop sink hoses, spray outlets, etc. They consist of a spring loaded check valve that seals against an atmospheric outlet when water supply pressure is turned on. Typical construction is shown in Figure 18.

When the water supply is turned off, the device vents to atmosphere, thus protecting against backsiphonage conditions. They should not be used as backpressure devices. Manual drain options are available, together with tamper-proof versions. A typical installation is shown in Figure 19.

FIGURE 19. Typical installation of hose bibb vacuum breaker.

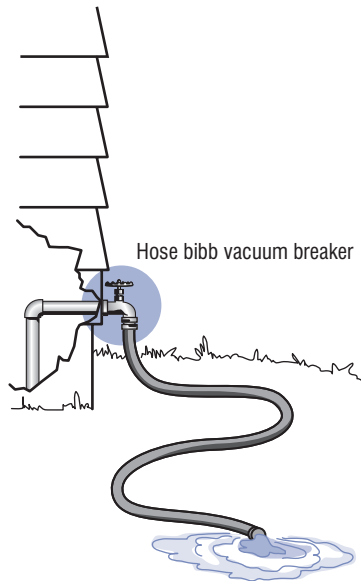
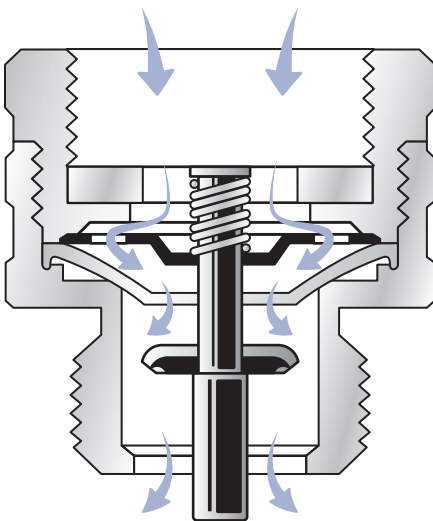


FIGURE 18. Hose bibb vacuum breaker.



Pressure Vacuum Breakers

This device is an outgrowth of the atmospheric vacuum breaker and evolved in response to a need to have an atmospheric vacuum breaker that could be utilized under constant pressure and that could be tested in line. A spring on top of the disc and float assembly, two added gate valves, test cocks, and an additional first check, provided the answer to achieve this device. See Figure 20.

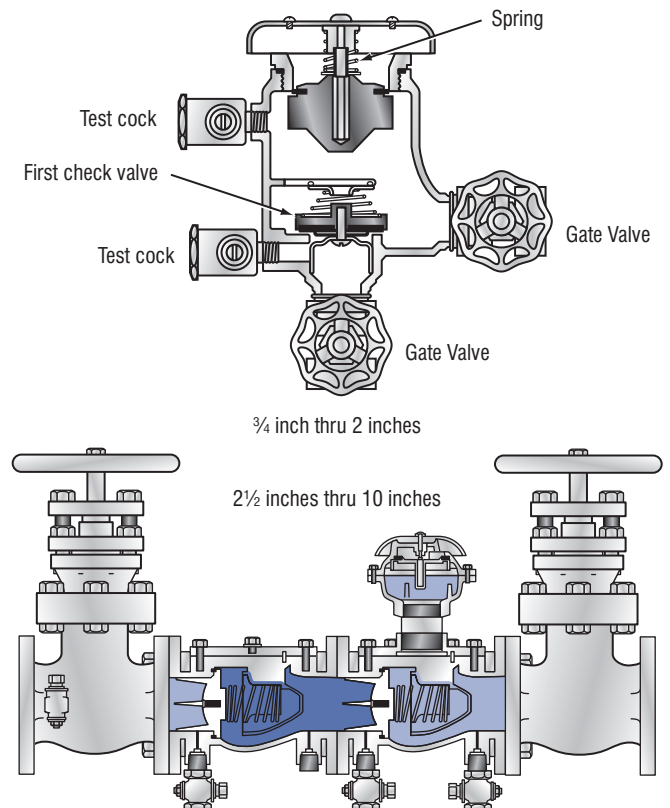
These units are available in the general configurations as shown in Figure 20 in sizes 1/2-inch through 10-inch and have broad usage in the agriculture and irrigation market. Typical agricultural and

industrial applications are shown in Figure 21.

Again, these devices may be used under constant pressure but do not protect against backpressure conditions. As a result, installation must be at least 6- to 12-inches higher than the existing outlet.

A spill resistant pressure vacuum breaker (SVB) is available that is a modification to the standard pressure vacuum breaker but specifically designed to minimize water spillage. Installation and hydraulic requirements are similar to the standard pressure vacuum breaker and the devices are recommended for internal use.

FIGURE 20. Pressure vacuum breaker



Double Check with Intermediate Atmospheric Vent

The need to provide a compact device in 1/2-inch and 3/4-inch pipe sizes that protects against moderate hazards, is capable of being used under constant pressure and that protects against backpressure, resulted in this unique backflow preventer. Construction is basically a double check valve having an atmospheric vent located between the two checks (See Figure 22).

Line pressure keeps the vent closed, but zero supply pressure or backsiphonage will open the inner chamber to atmosphere. With this device, extra protection is obtained through the atmospheric vent capability. Figure 23 shows a typical use of the device on a residential boiler supply line.

FIGURE 21. Typical agricultural and industrial application of pressure vacuum breaker.

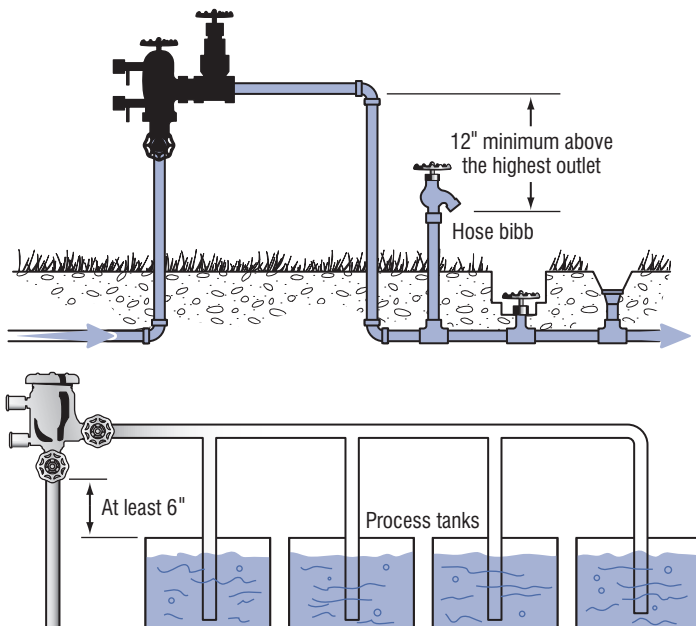


FIGURE 22. Double check valve with atmospheric vent.

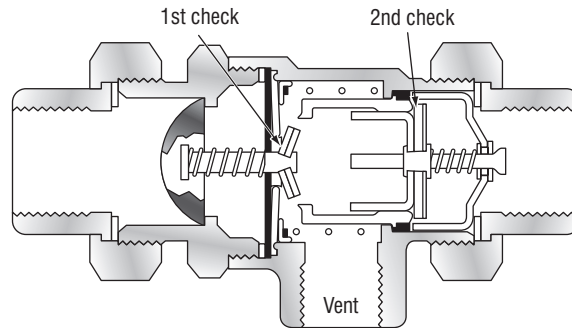
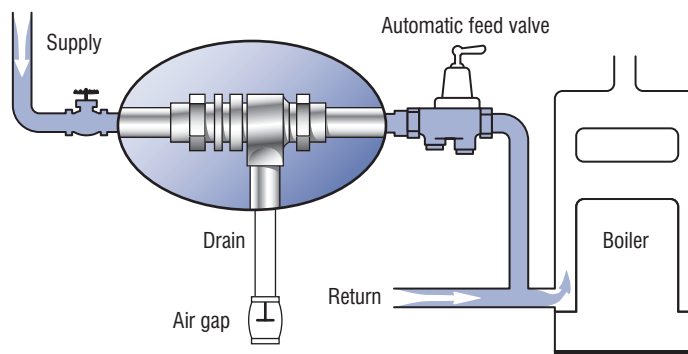


FIGURE 23. Typical residential use of double check with atmospheric vent.



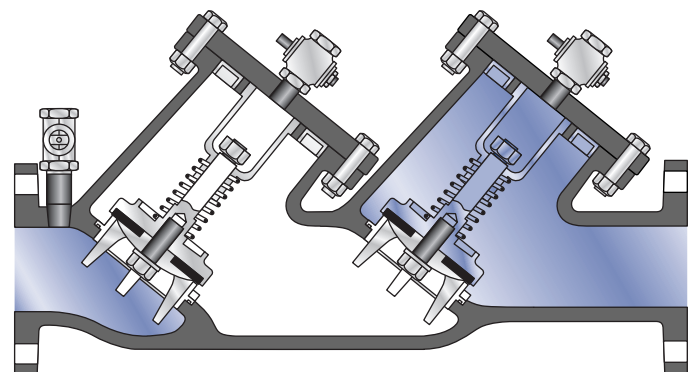
Double Check Valve

A double check valve is essentially two single check valves coupled within one body and furnished with test cocks and two tightly closing gate valves (See Figure 24).

The test capability feature gives this device a big advantage over the use of two independent check valves in that it can be readily tested to determine if either or both check valves are inoperative or fouled by debris. Each check is spring loaded closed and requires approximately a pound of pressure to open.

This spring loading provides the ability to “bite” through small debris and still seal—a protection feature not prevalent in unloaded swing check valves. Figure 24 shows a cross section of double check valve complete with test cocks. Double checks are commonly used to protect against low to medium hazard installations such as food processing steam kettles and apartment projects. They may be used under continuous pressure and protect against both backsiphonage and backpressure conditions.

FIGURE 24. Double check valve.

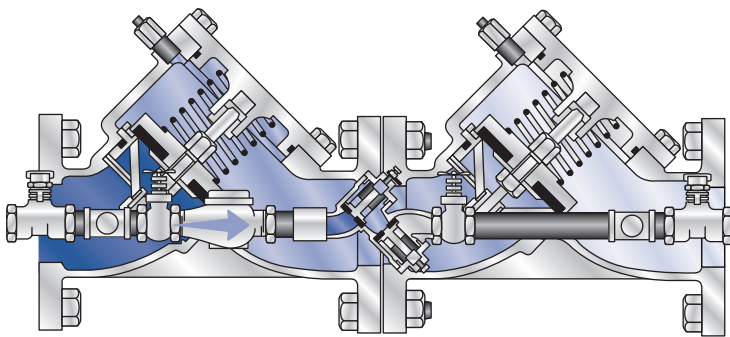


Double Check Detector Check

This device is an outgrowth of the double check valve and is primarily utilized in fire line installations. Its purpose is to protect the potable supply line from possible contamination or pollution from fire line chemical additives, booster pump fire line backpressure, stagnant “black water” that sits in fire lines over extended periods of time, the addition of “raw” water through outside fire pumper connections (Siamese outlets), and the detection of any water movement in the fire line water due to fire line leakage or deliberate water theft. It consists of two, spring loaded check valves, a bypass assembly with water meter and double check valve, and two tightly closing gate valves. See Figure 25. The addition of test cocks makes the device testable

to insure proper operation of both the primary checks and the bypass check valve. In the event of very low fire line water usage, (theft of water) the low pressure drop inherent in the bypass system permits the low flow of water to be metered through the bypass system. In a high flow demand, associated with deluge fire capability, the main check valves open, permitting high volume, low restricted flow, through the two large spring loaded check valves.

FIGURE 25.
Double check detector check.



Residential Dual Check

The need to furnish reliable and inexpensive backsiphonage and backpressure protection for individual residences resulted in the debut of the residential dual check. Protection of the main potable supply from household hazards such as home photograph chemicals, toxic insect and garden sprays, termite control pesticides used by exterminators, etc., reinforced, a true need for such a device. Figure 26 shows a cutaway of the device.

It is sized for 1/2-, 3/4-, and 1-inch service lines and is installed immediately downstream of the water meter. The use of plastic check modules and elimination of test cocks and gate valves keeps the cost reasonable while providing good, dependable protection. Typical installations are shown in Figures 27 and 28.

FIGURE 26.
Residential dual check.

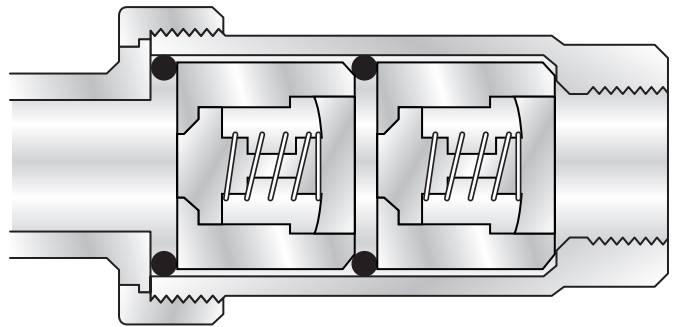


FIGURE 27.
Residential installation.

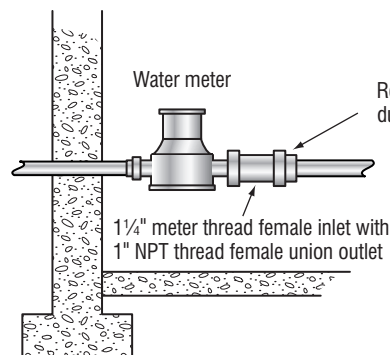
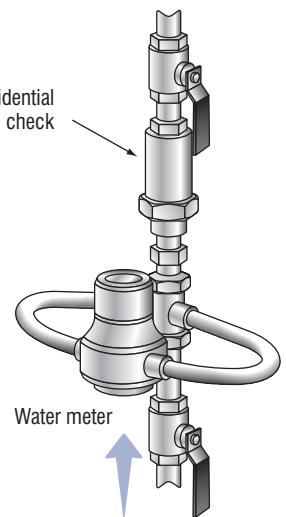


FIGURE 28.
Copper horn.



Reduced Pressure Principle Backflow Preventer

Maximum protection is achieved against backsiphonage and backpressure conditions utilizing reduced pressure principle backflow preventers. These devices are essentially modified double check valves with an atmospheric vent capability placed between the two checks and designed such that this “zone” between the two checks is always kept at least two pounds less than the supply pressure. With this design criteria, the reduced pressure principle backflow preventer can provide protection against backsiphonage and backpressure when both the first and second checks become fouled. They can be used under constant pressure and at high hazard installations. They are furnished with test cocks and gate valves to enable testing and are available in sizes $\frac{3}{4}$ -inch through 10 inch.

Figure 29A shows typical devices representative of $\frac{3}{4}$ -inch through 2-inch size and Figure 29B shows typical devices representative of $2\frac{1}{2}$ -inch through 10-inch sizes.

FIGURE 29A.
Reduced pressure zone backflow preventer ($\frac{3}{4}$ -inch thru 2-inches).

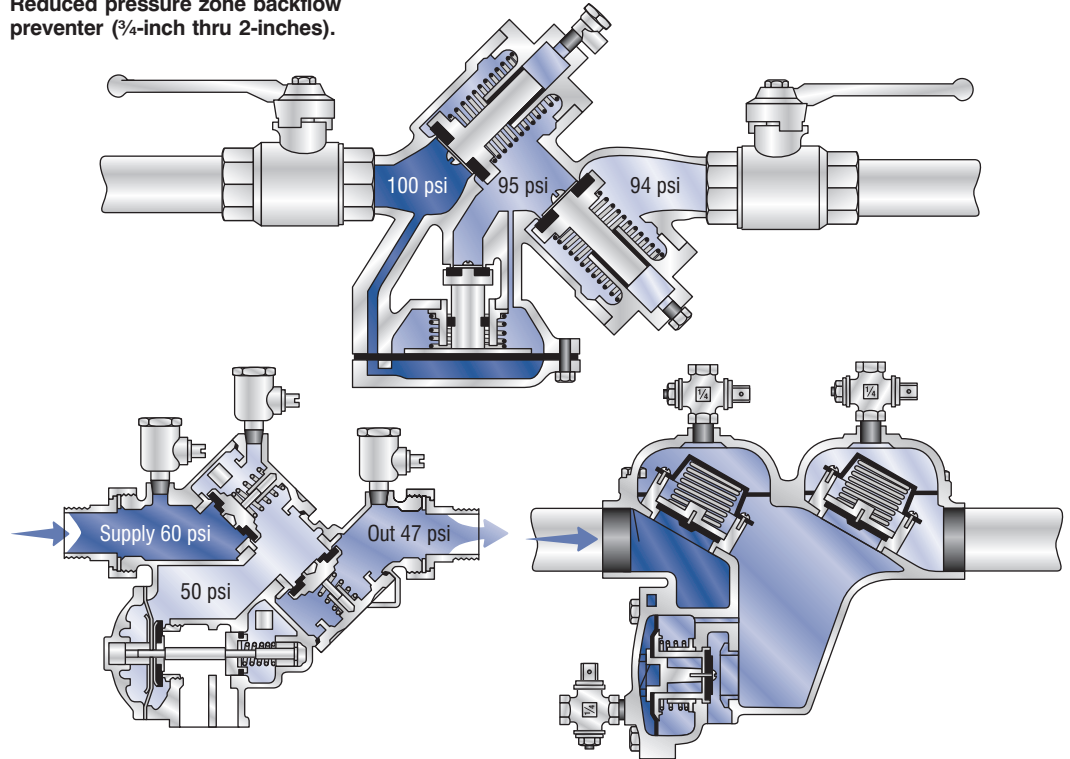
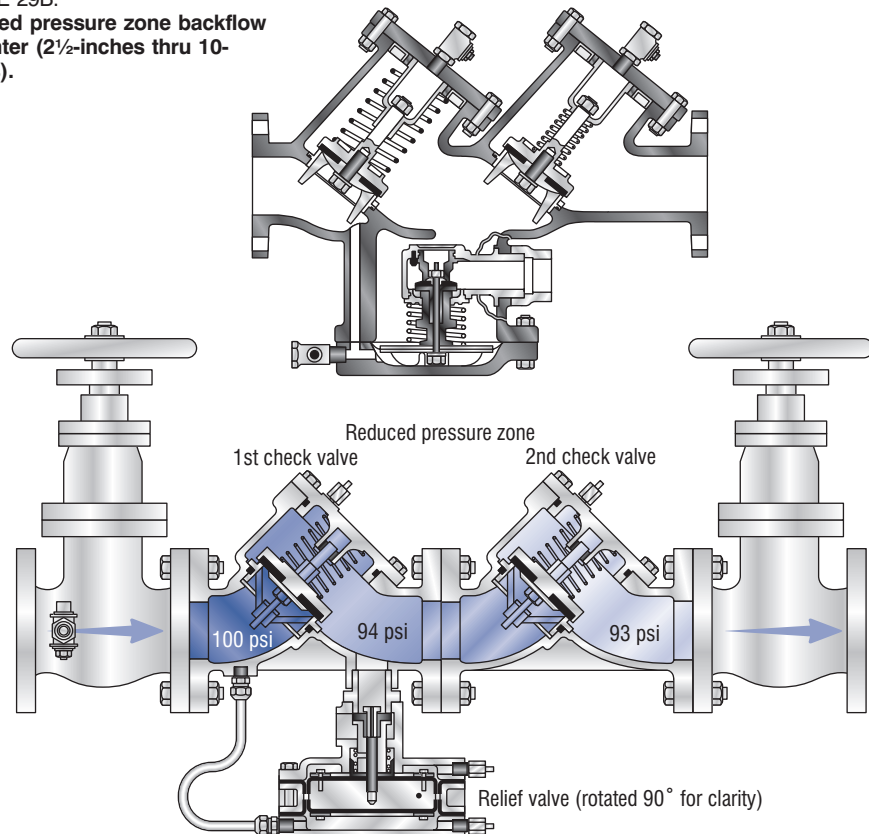


FIGURE 29B.
Reduced pressure zone backflow preventer ($2\frac{1}{2}$ -inches thru 10-inches).



The principles of operation of a reduced pressure principle backflow preventer are as follows:

Flow from the left enters the central chamber against the pressure exerted by the loaded check valve 1. The supply pressure is reduced thereupon by a predetermined amount. The pressure in the central chamber is maintained lower than the incoming supply pressure through the operation of the relief valve 3, which discharges to the atmosphere whenever the central chamber pressure approaches within a few pounds of the inlet pressure. Check valve 2 is lightly loaded to open with a pressure drop of 1 psi in the direction of flow and is independent of the pressure required to open the relief valve. In the event that

the pressure increases downstream from the device, tending to reverse the direction of flow, check valve 2 closes, preventing backflow. Because all valves may leak as a result of wear or obstruction, the protection provided by the check valves is not considered sufficient. If some obstruction prevents check valve 2 from closing tightly, the leakage back into the central chamber would increase the pressure in this zone, the relief valve would open, and flow would be discharged to the atmosphere.

When the supply pressure drops to the minimum differential required to operate the relief valve, the pressure in the central chamber should be atmospheric. If the inlet pressure should become less than atmospheric pressure,

relief valve 3 should remain fully open to the atmosphere to discharge any water which may be caused to backflow as a result of backpressure and leakage of check valve 2.

Malfunctioning of one or both of the check valves or relief valve should always be indicated by a discharge of water from the relief port. Under no circumstances should plugging of the relief port be permitted because the device depends upon an open port for safe operation. The pressure loss through the device may be expected to average between 10 and 20 psi within the normal range of operation, depending upon the size and flow rate of the device.

Reduced pressure principle backflow preventers are commonly installed on high

hazard installations such as plating plants, where they would protect against primarily backsiphonage potential, car washes where they would protect against backpressure conditions, and funeral parlors, hospital autopsy rooms, etc. The reduced pressure principle backflow preventer forms the backbone of cross-connection control programs. Since it is utilized to protect against high hazard installations, and since high hazard installations are the first consideration in protecting public health and safety, these devices are installed in large quantities over a broad range of plumbing and water works installations. Figures 31 and 32 show typical installations of these devices on high hazard installations.

FIGURE 30.
Reduced pressure zone backflow preventer — principle of operation.

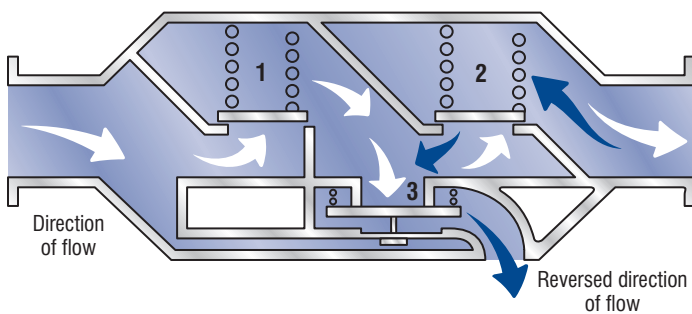


FIGURE 31.
Plating plant installation.

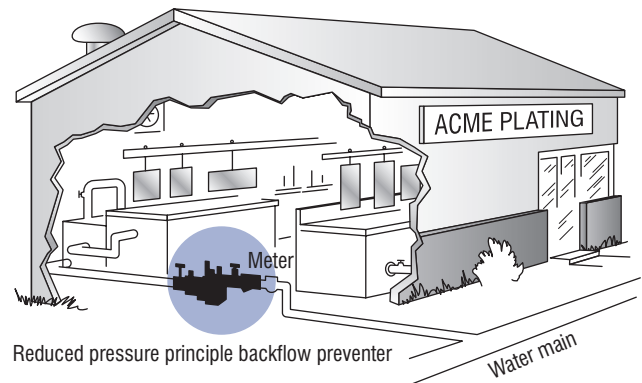


FIGURE 32.
Car wash installation.

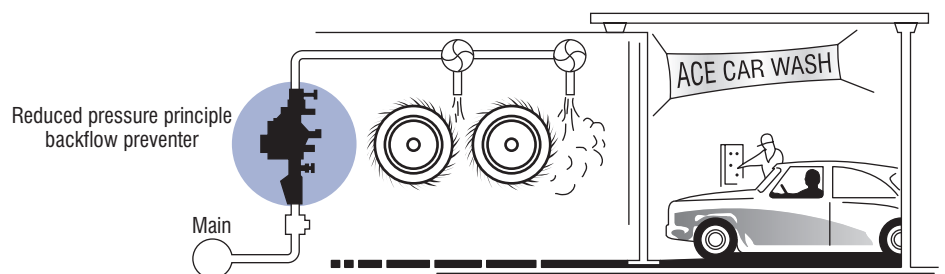
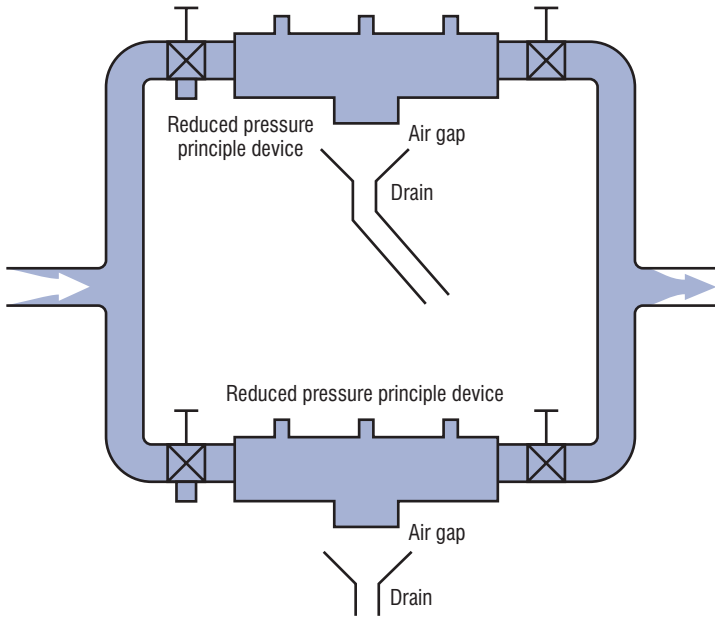


FIGURE 33.
Typical bypass configuration
reduced pressure principle
devices



Note: Devices to be set a min. of 12" and a max. of 30" from the floor and 12" from any wall.

Typical fire line installation double
check valve vertical installation.

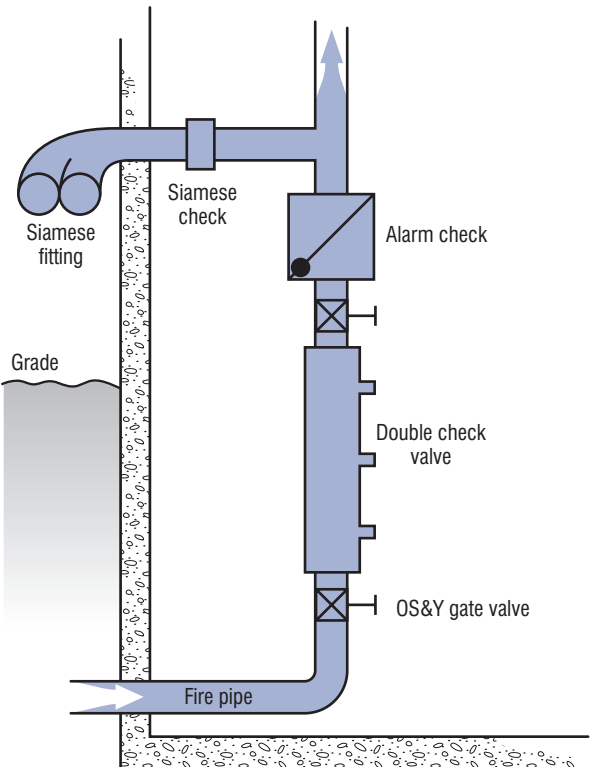


FIGURE 34.
Typical installation reduced
pressure principle device
horizontal illustration.

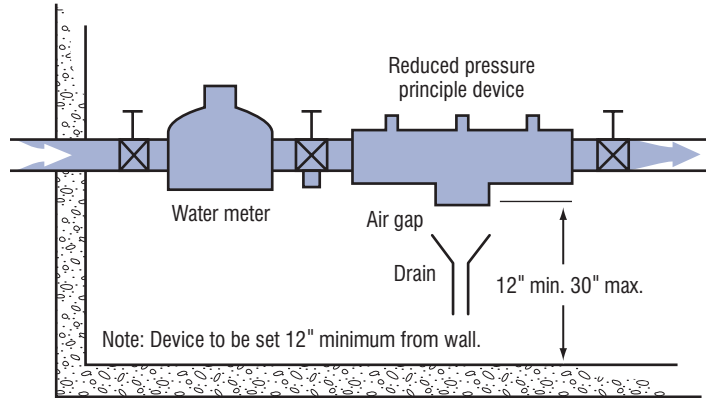
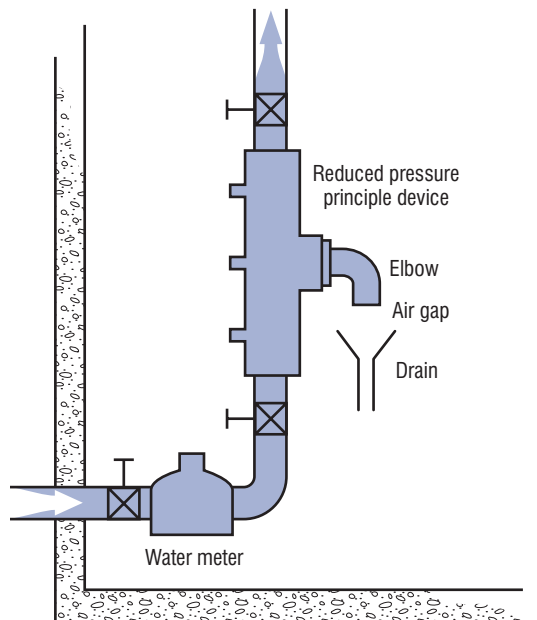


FIGURE 35.
Typical installation reduced
pressure principle device vertical
illustration.



Note: (1) Refer to manufacturers installation data for vertical mount.
 (2) Unit to be set at a height to permit ready access for testing and service.
 (3) Vertical installation only to be used if horizontal installation cannot be achieved.

FIGURE 36.
Typical installation double check valve horizontal and vertical installation.

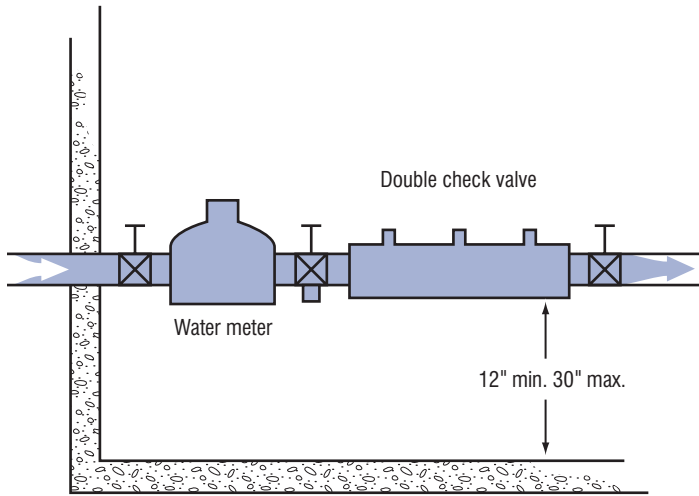
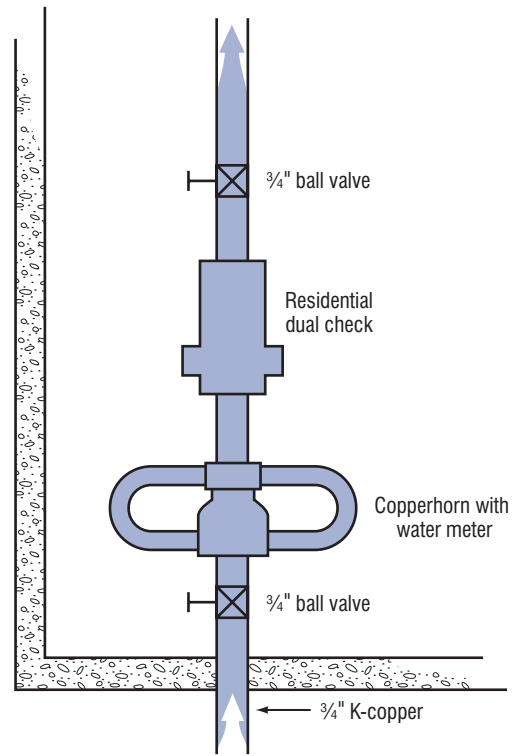
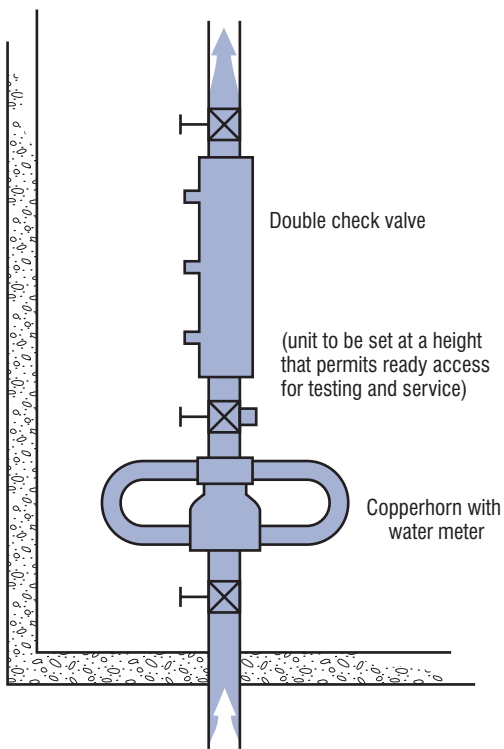
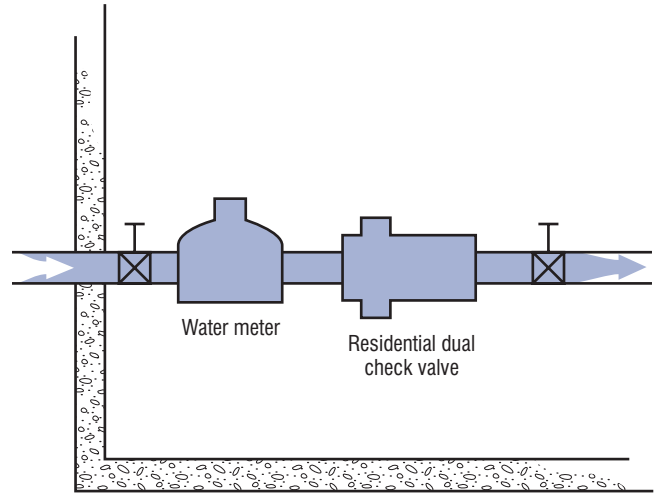


FIGURE 37.
Typical installation residential dual check with straight set and copperhorn.



Note: Vertical installation only to be used if horizontal installation cannot be achieved.

Testing Procedures for Backflow Preventers

Prior to initiating a test of any backflow device, it is recommended that the following procedures be followed:

1. Permission be obtained from the owner, or his representative, to shut down the water supply. This is necessary to insure that since all testing is accomplished under no-flow conditions, the owner is aware that his water supply will be temporarily shut off while the testing is being performed. Some commercial and industrial operations require constant and uninterrupted water supplies for cooling, boiler feed, seal pump water, etc. and water service interruption cannot be tolerated. The water supply to hospitals and continuous process industries cannot be shut off without planned and coordinated shut downs. The request to shut down the water supply is therefore a necessary prerequisite to protect the customer as well as limit the liability of the tester.

Concurrent with the request for permission to shut off the water, it is advisable to point out to the owner, or his representative, that while the water is shut off during the test period, any inadvertent use of water within the building will reduce the water pressure to zero. Backsiphonage could result if unprotected cross-

connections existed which would contaminate the building water supply system. In order to address this situation, it is recommended that the owner caution the inhabitants of the building not to use the water until the backflow test is completed and the water pressure restored. Additional options available to the building owner would be the installation of two backflow devices in parallel that would enable a protected bypass flow around the device to be tested. Also, if all water outlets are protected within the building with “fixture outlet protection” backflow devices, cross-connections would not create a problem in the event of potential backsiphonage conditions occurring while devices are tested, or for any other reason.

2. Determine the type of device to be tested i.e., double check valve or reduced pressure principle device.

3. Determine the flow direction. (Reference directional flow arrows or wording provided by the manufacturer on the device.)

4. Number the test cocks, bleed them of potential debris, and assemble appropriate test cock adapters and bushings that may be required.

5. Shut off the downstream (number 2) shut-off valve. (Ref. Item (1) above.)

6. Wait several moments prior to hooking up the test kit hoses when testing a reduced pressure principle device. If water exits the relief valve, in all likelihood, the first check valve is fouled and it is impractical to proceed with the testing until the valve is serviced. This waiting period is not necessary when testing double check valves.

7. Hook up the test kit hoses in the manner appropriate to the device being tested and the specific test being performed.

Test personnel are cautioned to be aware and follow local municipal, county, and state testing requirements and guidelines as may be dictated by local authority. The following test procedures are guidelines for standard, generally acceptable test procedures but may be amended, superceded, or modified by local jurisdiction.

Test Equipment

For field testing of reduced pressure principle backflow preventers and double check valve assemblies, a differential pressure test gauge is utilized having a 0 to 15 psi range and a working pressure of 500 psi. Appropriate length of hoses with necessary fittings accompany the test gauge. Several manufactured test kits are commercially available that incorporate the differential gauge, hoses, and fittings and are packaged for ease of portability and come with protective enclosures or straps for hanging. Calibrated water columns are commercially available that are portable and come with carrying cases.

It is important that all test equipment be periodically checked for calibration.

Pressure Vacuum Breaker

(Figure 38)

Field testing of a pressure vacuum breaker involves testing both the internal spring loaded soft seated check valve as well as testing the spring loaded air inlet valve. The testing must be performed with the device pressurized and the air inlet closed. The number 2 shut-off valve must also be closed and the air inlet valve canopy removed.

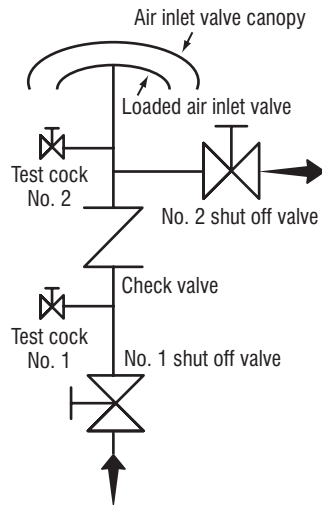
Method 1

Using a differential pressure gauge

Test 1 Test the internal check valve for tightness of 1 psid in the direction of flow.

1. With the valve body under pressure, (number 2 shut-off valve closed and

FIGURE 38.



number 1 shut-off valve open) bleed test cocks number 1 and number 2.

2. Hook up the high pressure hose to number 1 test cock and the low pressure hose to number 2 test cock.
3. Bleed the high pressure hose, and low pressure hose, in that order, and close the test kit needle valves slowly.
4. Record the differential pressure on the gauge. A reading of 1 psid is acceptable to insure a tight check valve.

Test 2 Test the air inlet valve for a breakaway of 1 psi.

1. Connect the high pressure hose to test cock number 2, and bleed the high pressure hose.
2. Shut off number 1 shut-off valve.
3. Slowly open the bleed valve of the test kit, and observe and record the psi when the air inlet poppet opens. This should be a minimum of 1 psi. Restore the valve to normal service.

Method 2

Using a water column sight tube and 90 degree elbow fitting with bleed needle

Test 1 Test the internal check valve for tightness of 1 psid in the direction of flow.

1. Assemble sight tube to test cock number 1. Open test cock and fill the tube to a minimum of 36-inches of water height.
2. Close number 1 shut-off valve.
3. Open test cock number 2. The air inlet valve should open and discharge water through number 2 test cock.
4. Open number 1 test cock. The sight tube level of water should drop slowly until it stabilizes. This point should be a minimum of 28-inches of water column which equals 1 psi.

Test 2 Test the air inlet valve for a breakaway of 1 psi.

1. Assemble sight tube to test cock number 2. Open test cock number 2 and fill the tube to a minimum of 36-inches of water height.
2. Close number 1 shut-off valve.
3. Bleed water slowly from the number 2 test cock bleed needle and observe the water column height as it drops.
4. At the point when the air inlet valve pops open, record the height of the water column. This point should be a minimum of 28-inches of water column which equals 1psi.

Restore the valve to normal service.

Reduced Pressure Principle Backflow Preventer

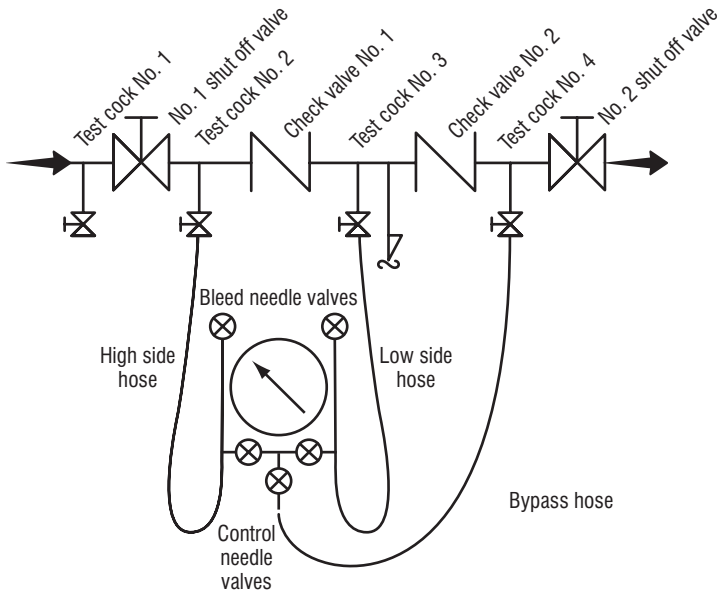
(Figure 39)

Field testing of a reduced pressure principle backflow preventer is accomplished utilizing a differential pressure gauge. The device is tested for three optional characteristics: i.e., (1) the first check valve is tight and maintains a minimum of 5 psi differential pressure, (2) the second check valve is tight against backpressure and (3) the relief valve opens at a minimum of 2 psi below inlet supply pressure. Testing is performed as follows:

Step 1 Test to insure that the first check valve is tight and maintains a minimum pressure of 5 psi differential pressure.

1. Verify that number 1 shut-off valve is open. Close number 2 shut-off valve. If there is no drainage from the relief valve it is assumed that the first check is tight.
2. Close all test kit valves.
3. Connect the high pressure hose to test cock number 2.
4. Connect the low pressure hose to test cock number 3.
5. Open test cocks number 2 and number 3.
6. Open high side bleed needle valve on test kit bleeding the air from the high hose. Close the high side bleed needle valve.
7. Open the low side bleed needle valve on test kit bleeding air from the low hose. Close the low side bleed needle valve. Record the differential gauge pressure. It should be a minimum of 5 psid.

FIGURE 39.

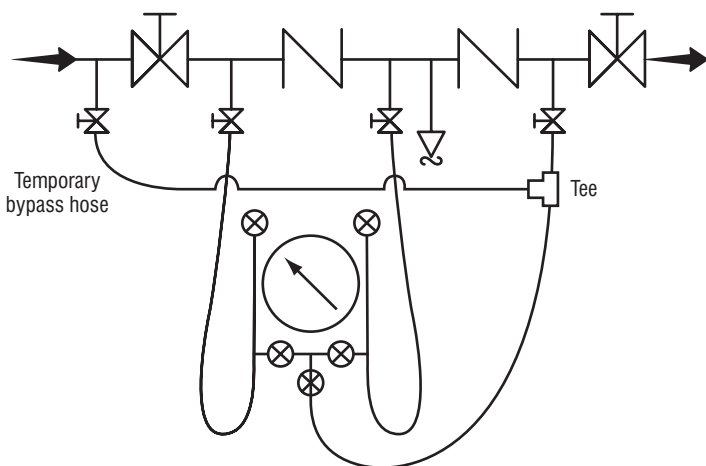


Step 2 Test to insure that the second check is tight against backpressure. (Figure 40)

1. Leaving the hoses hooked up as in the conclusion of Step 1 above, connect the bypass hose to test cock number 4.
2. Open test cock number 4, the high control needle valve and the bypass hose control needle valve on the test kit. (This supplies high

pressure water downstream of check valve number 2.) If the differential pressure gauge falls off and water comes out of the relief valve, the second check is recorded as leaking. If the differential pressure gauge remains steady, and no water comes out of the relief valve, the second check valve is considered tight

FIGURE 40.



3. To check the tightness of number 2 shut-off valve, leave the hoses hooked up the same as at the conclusion of Step 2 above, and then close test cock number 2. This stops the supply of any high pressure water downstream of check valve number 2. If the differential pressure gauge reading holds steady, the number 2 shut-off valve is recorded as being tight. If the differential pressure gauge drops to zero, the number 2 shut-off valve is recorded as leaking.

With a leaking number 2 shut-off valve, the device is, in most cases, in a flow condition and the previous readings taken are invalid. Unless a non-flow condition can be achieved, either through the operation of an additional shut-off downstream, or the use of a temporary compensating bypass hose, accurate test results will not be achieved.

Step 3 To check that the relief valve opens at a minimum pressure of 2 psi below inlet pressure.

1. With the hoses hooked up the same as at the conclusion of Step #2 (3) above, slowly open up the low control needle valve on the test kit and record the differential pressure gauge reading at the point when the water initially starts to drip from the relief valve opening. This pressure reading should not be below 2 psid.

This completes the standard field test for a reduced pressure principle backflow preventer. Before removal of the test equipment, the tester should insure that he opens number 2 shut-off valve thereby reestablishing flow. Also, the test kit should be thoroughly drained of all water to prevent freezing by opening all control needle valves and bleed needle valves.

All test data should be recorded on appropriate forms. (Ref: sample Page 45)

Note: The steps outlined above may vary in sequence depending upon local regulations and/or preferences.

Double Check Valve Assemblies

(Figure 41)

Some field test procedures for testing double check valve assemblies require that the number 1 shut-off valve be closed to accomplish the test. This procedure may introduce debris such as rust and tuberculin into the valve that will impact against check valve number 1 or number 2 and compromise the sealing quality. This potential problem should be considered prior to the selection of the appropriate test method.

Two test methods, one requiring closing of the number 1 shut-off valve, and one without this requirement are presented below:

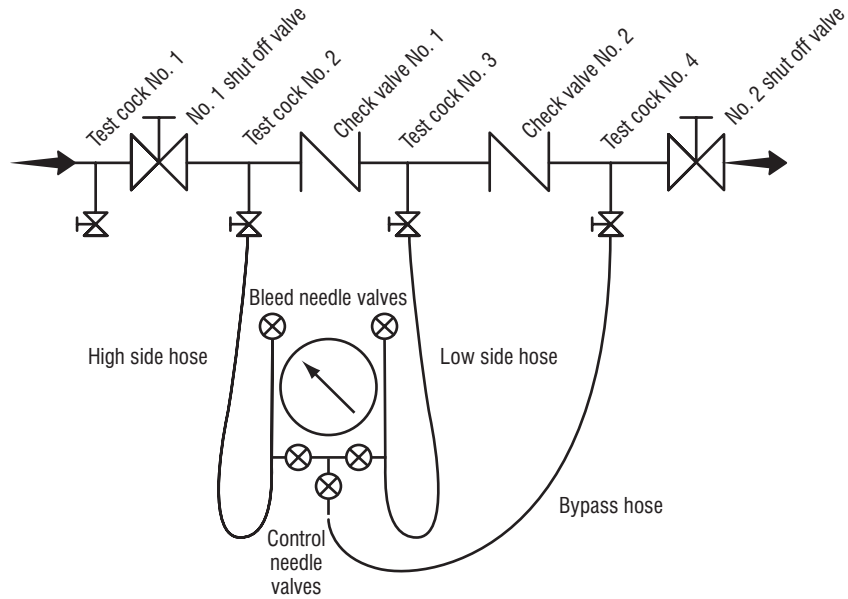
Method 1

Utilizing the differential pressure gauge and not shutting off number 1 shut-off valve. Figure 41)

Step 1 checking check valve number 1

1. Verify that the number 1 shut-off is open. Shut off number 2 shut-off valve.
2. Connect the high hose to test cock number 2.
3. Connect the low hose to test cock number 3.
4. Open test cocks 2 and 3.
5. Open high side bleed needle valve on test kit bleeding the air from the high hose. Close the high side bleed needle valve.
6. Open low side bleed needle valve on test kit bleeding the air from the low hose. Close the low side bleed needle valve.

FIGURE 41.



7. Record the differential gauge pressure reading. It should be a minimum of 1 psid.

8. Disconnect the hoses.

Step 2 Checking check valve number 2.

1. Connect the high hose to test cock number 3.
2. Connect the low hose to test cock number 4.
3. Open test cocks number 3 and 4.
4. Open high side bleed needle valve on test kit bleeding the air from the high hose. Close the high side bleed needle valve.
5. Open low side bleed needle valve on test kit bleeding the air from the low hose. Close the low side bleed needle valve.
6. Record the differential gauge pressure reading. It should be a minimum of 1 psid.
7. Disconnect the hoses.

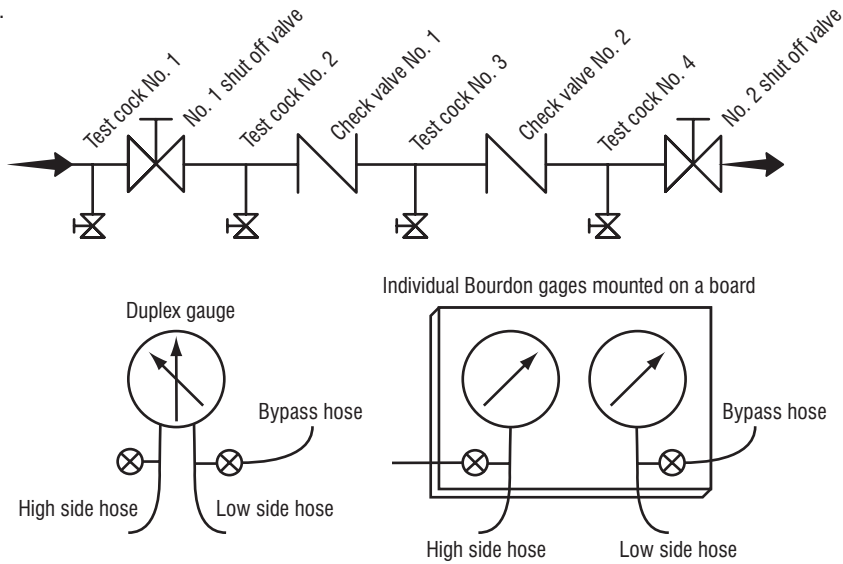
To check tightness of number 2 shut-off valve, both the check valves must be tight and holding a minimum of 1 psid. Also, little or no fluctuation of inlet supply pressure can be tolerated.

The testing is performed as follows:

1. Connect the high hose to number 2 test cock.
2. Connect the low hose to number 3 test cock.
3. Connect the bypass hose to number 4 test cock.
4. Open test cocks numbers 2, 3, and 4.
5. Open high side bleed needle valve on test kit bleeding the air from the high hose. Close the high side bleed needle valve.
6. Open low side bleed needle valve on test kit bleeding the air from the low hose. Close the low side bleed needle valve.

7. The differential gauge pressure should read a minimum of 1 psid.
8. Open the high side control needle valve and the bypass hose control needle valve on the test kit. (This supplies high pressure water downstream of check valve number 2).
9. Close test cock number 2. (This stops the supply of any high pressure water downstream of number 2 check valve). If the differential pressure gauge holds steady, the number 2 shut-off valve is recorded as being tight. If the differential pressure gauge drops to zero, the number 2 shut-off valve is recorded as leaking.

FIGURE 42.



With a leaking number 2 shut-off valve, the device is, in most cases, in a flow condition, and the previous test readings taken are invalid. Unless a non-flow condition can be achieved, either through the operation of an additional shut-off downstream, or the use of a temporary compensating bypass hose, accurate test results will not be achieved.

This completes the standard field test for a double check valve assembly. Prior to removal of the test equipment, the tester should insure that he opens number 2 shut-off valve thereby reestablishing flow. All test data should be recorded on appropriate forms and the test kit drained of water.

Method 2

Utilizing “Duplex Gauge” or individual bourdon gauges, requires closing number 1 shut-off. (Figure 42)

Step 1 checking check valve number 1

1. Connect the high hose to test cock number 2.
2. Connect the low hose to test cock number 3.
3. Open test cocks number 2 and number 3.
4. Close number 2 shut-off valve; then close number 1 shut-off valve.
5. By means of the high side needle valve, lower the pressure at test cock number 2 about 2 psi below the pressure at test cock number 3. If this small difference can be maintained, then check valve number 1 is reported as “tight”. Proceed to Step number 2. If the small difference cannot be maintained, proceed to Step number 3.

Step 2 checking check valve number 2.

Proceed exactly the same test procedure as in Step number 1, except that the high hose is connected to test cock number 4 and the low hose connected to test cock number 3.

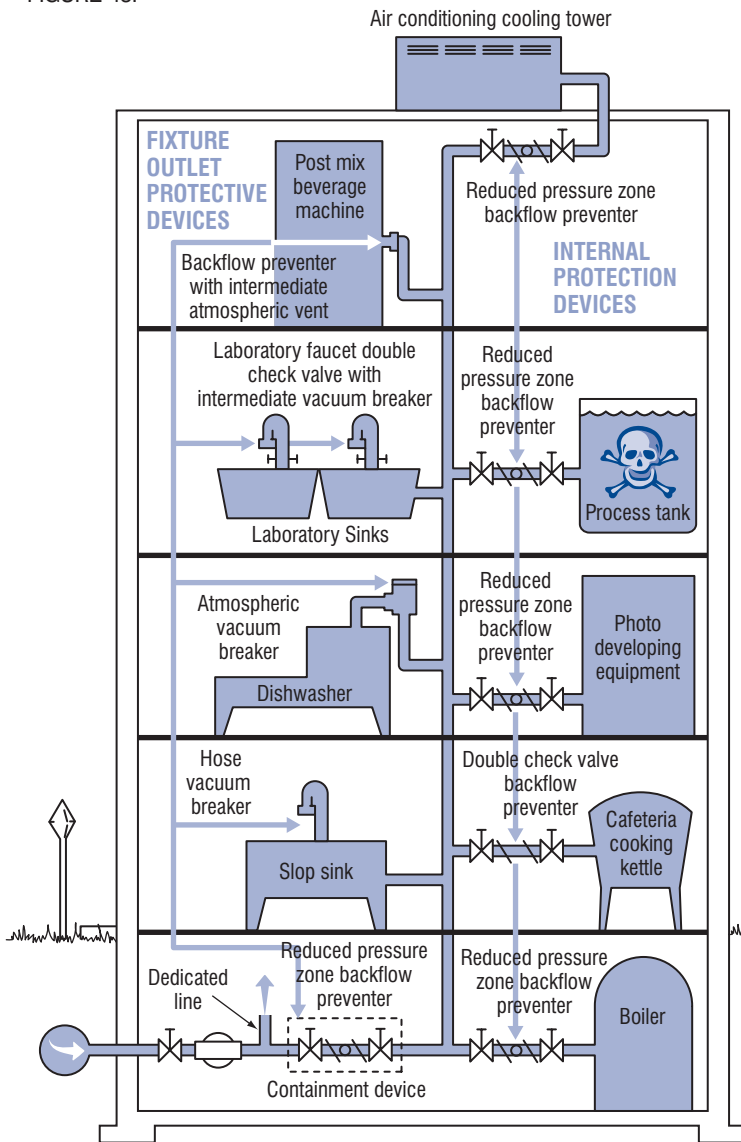
Step 3

1. Open shut-off valve number 1 to repressurize the assembly.
2. Loosely attach the bypass hose to test cock number 1, and bleed from the gauge through the bypass hose by opening the low side needle valve to eliminate trapped air. Close low side needle valve. Tighten bypass hose. Open test cock number 1.
3. Close number 1 shut-off valve.

4. By loosening the low side hose at test cock number 3, lower the pressure in the assembly about 10 psi below normal line conditions.
5. Simultaneously open both needle valves. If the check valve is holding tight the high pressure gauge will begin to drop while the low pressure gauge will increase. Close needle valves. If the gauge shows that a small (no more than 5 psi) backpressure is created and held, then the check valve is reported as tight. If the check valve leaks, a pressure differential is not maintained as both gauges tend to equalize or move back towards each other, then the check valve is reported as leaking. With both needle valves open enough to keep the needles on the gauge stationary, the amount of leakage is visible as the discharge from the upstream needle valve.

Administration of a Cross-Connection Control Program

FIGURE 43.



Under the provisions of the Safe Drinking Water Act of 1974, the Federal Government has established, through the EPA (Environmental Protection Agency), national standards of safe drinking water. The states are responsible for the enforcement of these standards as well as the supervision of public water supply systems and the sources of drinking water. The water purveyor (supplier) is held responsible for compliance to the provisions of the Safe Drinking Water Act, to include a warranty that water quality provided by his operation is in conformance with the EPA standards at the source, and is delivered to the customer without the quality being compromised as a result of its delivery through the distribution system. As specified in the Code of Federal Regulations (Volume 40, Paragraph 141.2, Section (c)) "Maximum contaminant level, means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition."

Figure 43 depicts several options that are open to a water purveyor when considering cross-connection protection to commercial, industrial, and residential customers. He may elect to work initially on the

"containment" theory. This approach utilizes a minimum of backflow devices and isolates the customer from the water main. It virtually insulates the customer from potentially contaminating or polluting the public water supply system. While it is recognized that "containment" does not protect the customer within his building, it does effectively remove him from possible contamination to the public water supply system. If the water purveyor elects to protect his customers on a domestic internal protective basis and/or "fixture outlet protective basis," then cross-connection control protective devices are placed at internal high hazard locations as well as at all locations where cross-connections exist at the "last free-flowing outlet." This approach entails extensive cross-connection survey work on behalf of the water superintendent as well as constant policing of the plumbing within each commercial, industrial and residential account. In large water supply systems, fixture outlet protection cross-connection control philosophy, in itself, is a virtual impossibility to achieve and police due to the quantity of systems involved, the complexity of the plumbing systems inherent in many industrial sites, and the fact that many plumbing changes are made within industrial and commercial establishments that do not require the water department to license or otherwise endorse or ratify when contemplated or completed.

In addition, internal plumbing cross-connection control survey work is generally foreign to the average water

Method of Action

purveyor and is not normally a portion of his job description or duties. While it is admirable for the water purveyor to accept and perform survey work, he should be aware that he runs the risk of additional liability in an area that may be in conflict with plumbing inspectors, maintenance personnel and other public health officials.

Even where extensive “fixture outlet protection,” cross-connection control programs are in effect through the efforts of an aggressive and thorough water supply cross-connection control program, the water authorities should also have an active “containment” program in order to address the many plumbing changes that are made and that are inherent within commercial and industrial establishments. In essence, fixture outlet protection becomes an extension beyond the “containment” program.

Also, in order for the supplier of water to provide maximum protection of the water distribution system, consideration should be given to requiring the owner of a premise (commercial, industrial, or residential) to provide at his own expense, adequate proof that his internal water system complies with the local or state plumbing code(s). In addition, he may be required to install, have tested, and maintain, all backflow protection devices that would be required—at his own expense!

The supplier of water should have the right of entry to determine degree of hazard and the existence of cross-connections in order to protect the potable water system. By so doing he can assess the overall

nature of the facility and its potential impact on the water system (determine degree of hazard], personally see actual cross-connections that could contaminate the water system, and take appropriate action to insure the elimination of the cross-connection or the installation of required backflow devices.

To assist the water purveyor or in the total administration of a cross-connection control program requires that all public health officials, plumbing inspectors, building managers, plumbing installers, and maintenance men participate and share in the responsibility to protect the public health and safety of individuals from cross-connections and contamination or pollution of the public water supply system.

Dedicated Line

Figure 43 also depicts the use of a “dedicated” potable water line. This line initiates immediately downstream of the water meter and is “dedicated” solely for human consumption i.e., drinking fountains, safety showers, eye wash stations, etc. It is very important that this piping be color coded throughout in accordance with local plumbing regulations, flow direction arrows added, and the piping religiously policed to insure that no cross-connections to other equipment or piping are made that could compromise water quality. In the event that it is felt that policing of this line cannot be reliably maintained or enforced, the installation of a containment device on this line should be a consideration.

A complete cross-connection control program requires a carefully planned and executed initial action plan followed by aggressive implementation and constant follow-up. Proper staffing and education of personnel is a requirement to insure that an effective program is achieved. A recommended plan of action for a cross-connection control program should include the following characteristics:

(1) Establish a cross-connection control ordinance at the local level and have it approved by the water commissioners, town manager, etc., and insure that it is adopted by the town or private water authority as a legally enforceable document.

(2) Conduct public informative meetings that define the proposed cross-connection control program, review the local cross-connection control ordinance, and answer all questions that may arise concerning the reason for the program, why and how the survey will be conducted, and the potential impact upon the industrial, commercial and residential water customers. Have state authorities and the local press and radio attend the meeting.

(3) Place written notices of the pending cross-connection control program in the local newspaper, and have the local radio station make announcements about the program as a public service notice.

(4) Send employees who will administer the program, to a course, or courses, on backflow tester certification, backflow survey courses, backflow device repair courses, etc.

(5) Equip the water authority with backflow device test kits.

(6) Conduct meeting(s) with the local plumbing inspection people, building inspectors, and licensed plumbers in the area who will be active in the inspection, installations and repair of backflow devices. Inform them of the intent of the program and the part that they can play in the successful implementation of the program.

(7) Prior to initiating a survey of the established commercial and industrial installations, prepare a list of these establishments from existing records, then prioritize the degree of hazard that they present to the water system, i.e., plating plants, hospitals, car wash facilities, industrial metal finishing and fabrication, mortuaries, etc. These will be the initial facilities inspected for cross-connections and will be followed by less hazardous installations.

(8) Insure that any new construction plans are reviewed by the water authority to assess the degree of hazard and insure that the proper backflow preventer is installed concurrent with the potential degree of hazard that the facility presents.

(9) Establish a residential backflow protection program that will automatically insure that a residential dual check backflow device is installed automatically at every new residence.

(10) As water meters are repaired or replaced at residences, insure that a residential dual check backflow preventer is set with the new or reworked water meter. Be sure to have the owner address thermal expansion provisions.

Cross-Connection Control Survey Work

(11) Prepare a listing of all testable backflow devices in the community and insure that they are tested by certified test personnel at the time intervals consistent with the local cross-connection control ordinance.

(12) Prepare and submit testing documentation of backflow devices to the State authority responsible for monitoring this data.

(13) Survey all commercial and industrial facilities and require appropriate backflow protection based upon the containment philosophy and/or internal protection and fixture outlet protection. Follow up to insure that the recommended devices are installed and tested on both an initial basis and a periodic basis consistent with the cross-connection control ordinance.

The surveys should be conducted by personnel experienced in commercial and industrial processes. The owners or owners representatives, should be questioned as to what the water is being used for in the facility and what hazards the operations may present to the water system (both within the facility and to the water distribution system) in the event that a backsiphonage or backpressure condition were to exist concurrent with a non-protected cross-connection. In the event that experienced survey personnel are not available within the water authority to conduct the survey, consideration should be given to having a consulting firm perform the survey on behalf of the water department.

Cross-connection control survey work should only be performed by personnel knowledgeable about commercial and industrial potential cross-connections as well as general industrial uses for both potable and process water. If “containment” is the prime objective of the survey, then only sufficient time need be spent in the facility to determine the degree of hazard inherent within the facility or operation. Once this is determined, a judgment can be made by the cross-connection control inspector as to what type of backflow protective device will be needed at the potable supply entrance, or immediately downstream of the water meter. In the event that the cross-connection control program requires “total” protection to the last free flowing outlet, then the survey must be conducted in depth to visually inspect for all cross-connections within the facility and make recommendations and requirements for fixture outlet protective devices, internal protective devices, and containment devices.

It is recommended that consideration be given to the following objectives when performing a cross-connection control survey:

(1) Determine if the survey will be conducted with a pre-arranged appointment or unannounced.

(2) Upon entry, identify yourself and the purpose of the visitation and request to see the plant manager, owner, or maintenance supervisor in order to explain the purpose of the visit and why the cross-

connection survey will be of benefit to him.

(3) Ask what processes are involved within the facility and for what purpose potable water is used, i.e., do the boilers have chemical additives? Are air conditioning cooling towers in use with chemical additives? Do they use water savers with chemical additives? Do they have a second source of water (raw water from wells, etc.) in addition to the potable water supply? Does the process water cross-connect with potentially hazardous chemical etching tanks, etc.?

(4) Request “as-built” engineering drawings of the potable water supply in order to trace out internal potable lines and potential areas of cross-connections.

(5) Initiate the survey by starting at the potable entrance supply (the water meter in most cases) and then proceed with the internal survey in the event that total internal protective devices and fixture outlet protective devices are desired.

(6) Survey the plant facilities with the objective of looking for cross-connections at all potable water outlets such as:

- Hose bibbs
- Slop sinks
- Wash room facilities
- Cafeteria and kitchens
- Fire protection and Siamese outlets
- Irrigation outlets
- Boiler rooms
- Mechanical room
- Laundry facilities (hospitals)
- Production floor

(7) Make a sketch of all areas requiring backflow protection devices.

(8) Review with the host what you have found and explain the findings to him. Inform him that he will receive a written report documenting the findings together with a written recommendation for corrective action. Attempt to answer all questions at this time. Review the findings with the owner or manager if time and circumstances permit.

(9) Document all findings and recommendations prior to preparing the written report. Include as many sketches or photos with the final report as possible. If the located cross connection(s) cannot be eliminated, state the generic type of backflow preventer required at each cross connection found.

(10) Consider requiring or recommending compliance of the survey findings within a definitive time frame. (if appropriate authority is in effect).

Cross-Connection Control and Backflow Prevention Program

The successful promotion of a cross-connection control and backflow prevention program in a municipality will be dependent upon legal authority to conduct such a program. Where a community has adopted a modern plumbing code, such as the National Plumbing Code, ASA A40.8-1955, or subsequent revisions thereof, provisions of the code will govern backflow and cross-connections. It then remains to provide an ordinance that will establish a program of inspection for an elimination of cross- and backflow connections within the community. Frequently authority for such a program may already be possessed by the water department or water authority. In such cases no further document may be needed. A cross-connection control ordinance should have at least three basic parts.

1. Authority for establishment of a program.
 2. Technical provisions relating to eliminating backflow and cross-connections.
 3. Penalty provisions for violations.
- The following model program is suggested for municipalities who desire to adopt a cross-connection control ordinance. Communities adopting ordinances should check with State health officials to assure conformance with State codes. The form of the ordinance should comply with local legal requirements and receive legal adoption from the community.

**CROSS CONNECTION CONTROL
MODEL PROGRAM**

WATER DEPARTMENT NAME
ADDRESS

DATE

Approved _____
Date _____

Water Department Name Cross-Connection Control Program

I. Purpose

- A. To protect the public potable water supply served by the () Water Department from the possibility of contamination or pollution by isolating, within its customers internal distribution system, such contaminants or pollutants which could backflow or back-siphon into the public water system.
- B. To promote the elimination or control of existing cross-connections, actual or potential, between its customers in-plant potable water system, and non-potable systems.
- C. To provide for the maintenance of a continuing program of cross-connection control which will effectively prevent the contamination or pollution of all potable water systems by cross-connection.

II. Authority

- A. The Federal Safe Drinking Water Act of 1974, and the statutes of the State of () Chapters () the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.
- B. () Water Department, Rules and Regulations, adopted.

III. Responsibility

The Director of Municipal Services shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or backsiphonage of contaminants or pollutants through the water service connection. If, in the judgment of the Director of Municipal Services, an approved backflow device is required at the city's water service connection to any customer's premises, the Director, or his delegated agent, shall give notice in writing to said customer to install an approved backflow prevention device at each service connection to his premises. The customer shall, within 90 days install such approved device, or devices, at his own expense, and failure or refusal, or inability on the part of the customer to install said device or devices within ninety (90) days, shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.

IV. Definitions

A. Approved

Accepted by the Director of Municipal Services as meeting an applicable specification stated or cited in this regulation, or as suitable for the proposed use.

B. Auxiliary Water Supply

Any water supply, on or available, to the premises other than the purveyor's approved public potable water supply.

C. Backflow

The flow of water or other liquids, mixtures or substances, under positive or reduced pressure in the distribution pipes of a potable water supply from any source other than its intended source.

D. Backflow Preventer

A device or means designed to prevent backflow or backsiphonage. Most commonly categorized as air gap, reduced pressure principle device, double check valve assembly, pressure vacuum breaker, atmospheric vacuum breaker, hose bibb vacuum breaker, residential dual check, double check with intermediate atmospheric vent, and barometric loop.

D.1 Air Gap

A physical separation sufficient to prevent backflow between the free-flowing discharge end of the potable water system and any other system. Physically defined as a distance equal to twice the diameter of the supply side pipe diameter but never less than one (1) inch.

D.2 Atmospheric Vacuum Breaker

A device which prevents backsiphonage by creating an atmospheric vent when there is either a negative pressure or subatmospheric pressure in a water system.

D.3 Barometric Loop

A fabricated piping arrangement rising at least thirty five (35) feet at its topmost point above the highest fixture it supplies. It is utilized in water supply systems to protect against backsiphonage.

D.4 Double Check Valve Assembly

An assembly of two (2) independently operating spring loaded check valves with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve.

D.5 Double Check Valve with Intermediate Atmospheric Vent

A device having two (2) spring loaded check valves separated by an atmospheric vent chamber.

D.6 Hose Bibb Vacuum Breaker

A device which is permanently attached to a hose bibb and which acts as an atmospheric vacuum breaker.

D.7 Pressure Vacuum Breaker

A device containing one or two independently operated spring loaded check valves and an independently operated spring loaded air inlet valve located on the discharge side of the check or checks. Device includes tightly closing shut-off valves on each side of the check valves and properly located test cocks for the testing of the check valve(s).

D.8 Reduced Pressure Principle Backflow Preventer

An assembly consisting of two (2) independently operating approved check valves with an automatically operating differential relief valve located between the two (2) check valves, tightly closing shut-off valves on each side of the check valves plus properly located test cocks for the testing of the check valves and the relief valve.

D.9 Residential Dual Check

An assembly of two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks. Generally employed immediately downstream of the water meter to act as a containment device.

E. Backpressure

A condition in which the owners system pressure is greater than the suppliers system pressure.

F. Backsiphonage

The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

G. Commission

The State of () Control Commission.

H. Containment

A method of backflow prevention which requires a backflow prevention preventer at the water service entrance.

I. Contaminant

A substance that will impair the quality of the water to a degree that it creates a serious health hazard to the public leading to poisoning or the spread of disease.

J. Cross-Connection

Any actual or potential connection between the public water supply and a source of contamination or pollution.

K. Department

City of () Water Department.

L. Fixture Isolation

A method of backflow prevention in which a backflow preventer is located to correct a cross connection at an in-plant location rather than at a water service entrance.

M. Owner

Any person who has legal title to, or license to operate or habitat in, a property upon which a cross-connection inspection is to be made or upon which a cross-connection is present.

N. Person

Any individual, partnership, company, public or private corporation, political subdivision or agency of the State Department, agency or instrumentality or the United States or any other legal entity.

O. Permit

A document issued by the Department which allows the use of a backflow preventer.

P. Pollutant

A foreign substance, that if permitted to get into the public water system, will degrade its quality so as to constitute a moderate hazard, or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably effect such water for domestic use.

Q. Water Service Entrance

That point in the owners water system beyond the sanitary control of the District; generally considered to be the outlet end of the water meter and always before any unprotected branch.

R. Director of Municipal Services

The Director, or his delegated representative in charge of the () Department of Municipal Services, is invested with the authority and responsibility for the implementation of a cross-connection control program and for the enforcement of the provisions of the Ordinance.

V. Administration

A. The Department will operate a cross-connection control program, to include the keeping of necessary records, which fulfills the requirements of the Commission's Cross-Connection Regulations and is approved by the Commission.

B. The Owner shall allow his property to be inspected for possible cross-connections and shall follow the provisions of the Department's program and the Commission's Regulations if a cross-connection is permitted.

C. If the Department requires that the public supply be protected by containment, the Owner shall be responsible for water quality beyond the outlet end of the containment device and should utilize fixture outlet protection for that purpose.

He may utilize public health officials, or personnel from the Department, or their delegated representatives, to assist him in the survey of his facilities and to assist him in the selection of proper fixture outlet devices, and the proper installation of these devices.

VI. Requirements

A. Department

1. On new installations, the Department will provide on-site evaluation and/or inspection of plans in order to determine the type of backflow preventer, if any, that will be required, will issue permit, and perform inspection and testing. In any case, a minimum of a dual check valve will be required in any new construction.

2. For premises existing prior to the start of this program, the Department will perform evaluations and inspections of plans and/or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. Ordinarily, ninety (90) days will be allowed, however, this time period may be shortened depending upon the degree of hazard involved and the history of the device(s) in question.

3. The Department will not allow any cross-connection to remain unless it is protected by an approved backflow preventer for which a permit has been issued and which will be regularly tested to insure satisfactory operation.

4. The Department shall inform the Owner by letter, of any failure to comply, by the time of the first re-inspection. The Department will allow an additional fifteen (15) days for the correction. In the event the Owner fails to comply with the necessary correction by the time of the second re-inspection, the Department will inform the Owner by letter, that the water service to the Owner's premises will be terminated within a period not to exceed five (5) days. In the event that the Owner informs the Department of extenuating circumstances as to why the correction has not been made, a time extension may be granted by the Department but in no case will exceed an additional thirty (30) days.

5. If the Department determines at any time that a serious threat to the public health exists, the water service will be terminated immediately.

6. The Department shall have on file, a list of Private Contractors who are certified backflow device testers. All charges for these tests will be paid by the Owner of the building or property.

7. The Department will begin initial premise inspections to determine the nature of existing or potential hazards, following the approval of this program by the Commission, during the calendar year (). Initial focus will be on high hazard industries and commercial premises.

B. Owner

1. The Owner shall be responsible for the elimination or protection of all cross-connections on his premises.

2. The Owner, after having been informed by a letter from the Department, shall at his expense, install, maintain, and test, or have tested, any and all backflow preventers on his premises.

3. The Owner shall correct any malfunction of the backflow preventer which is revealed by periodic testing.

4. The Owner shall inform the Department of any proposed or modified cross-connections and also any existing cross-connections of which the Owner is aware but has not been found by the Department.

5. The Owner shall not install a bypass around any backflow preventer unless there is a backflow preventer of the same type on the bypass. Owners who cannot shut down operation for testing of the device(s) must supply additional devices necessary to allow testing to take place. (Ref. Fig. 33 page 23.)

6. The Owner shall install backflow preventers in a manner approved by the Department. (Ref. Figures 3 through 37, pages 23 through 24.)

7. The Owner shall install only backflow preventers approved by the Department or the Commission.

8. Any Owner having a private well or other private water source, must have a permit if the well or source is cross-connected to the Department's system. Permission to cross-connect may be denied by the Department. The Owner may be required to install a backflow preventer at the service entrance if a private water source is maintained, even if it is not cross-connected to the Department's system.

9. In the event the Owner installs plumbing to provide potable water for domestic purposes which is on the Department's side of the backflow preventer, such plumbing must have its own backflow preventer installed.

10. The Owner shall be responsible for the payment of all fees for permits, annual or semi-annual device testing, retesting in the case that the device fails to operate correctly, and second re-inspections for non-compliance with Department or Commission requirements.

VII. Degree of Hazard

The Department recognizes the threat to the public water system arising from cross-connections. All threats will be classified by degree of hazard and will require the installation of approved reduced pressure principle backflow prevention devices or double check valves.

VIII. Permits

The Department shall not permit a cross-connection within the public water supply system unless it is considered necessary and that it cannot be eliminated.

A. Cross-connection permits that are required for each backflow prevention device are obtained from the Department. A fee of () dollars will be charged for the initial permit and () dollars for the renewal of each permit.

B. Permits shall be renewed every () years and are non-transferable. Permits are subject to revocation and become immediately revoked if the Owner should so change the type of cross-connection or degree of hazard associated with the service.

C. A permit is not required when fixture isolation is achieved with the utilization of a non-testable backflow preventer.

IX. Existing in-use backflow prevention devices.

Any existing backflow preventer shall be allowed by the Department to continue in service unless the degree of hazard is such as to supercede the effectiveness of the present backflow preventer, or result in an unreasonable risk to the public health. Where the degree of hazard has increased, as in the case of a residential installation converting to a business establishment, any existing backflow preventer must be upgraded to a reduced pressure principle device, or a reduced pressure principle device must be installed in the event that no backflow device was present.

X. Periodic Testing

A. Reduced pressure principle backflow devices shall be tested and inspected at least semi-annually.

B. Periodic testing shall be performed by the Department's certified tester or his delegated representative. This testing will be done at the owner's expense.

C. The testing shall be conducted during the Department's regular business hours. Exceptions to this, when at the request of the owner, may require additional charges to cover the increased costs to the Department.

D. Any backflow preventer which fails during a periodic test will be repaired or replaced. When repairs are necessary, upon completion of the repair the device will be re-tested at owners expense to insure correct operation. High hazard situations will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be repaired immediately. In other situations, a compliance date of not more than thirty (30) days after the test date will be established. The owner is respon-

sible for spare parts, repair tools, or a replacement device. Parallel installation of two (2) devices is an effective means of the owner insuring that uninterrupted water service during testing or repair of devices and is strongly recommended when the owner desires such continuity. (Ref. Fig. 33 page 23.)

E. Backflow prevention devices will be tested more frequently than specified in A. above, in cases where there is a history of test failures and the Department feels that due to the degree of hazard involved, additional testing is warranted. Cost of the additional tests will be born by the owner.

XI. Records and Reports

A. Records

The Department will initiate and maintain the following:

1. Master files on customer cross-connection tests and/or inspections.
2. Master files on cross-connection permits.
3. Copies of permits and permit applications.
4. Copies of lists and summaries supplied to the Commission.

B. Reports

The Department will submit the following to the Commission.

1. Initial listing of low hazard cross-connections to the State.
2. Initial listing of high hazard cross-connections to the State.
3. Annual update lists of items 1 and 2 above.
4. Annual summary of cross-connection inspections to the State.

XII. Fees and Charges

The Department will publish a list of fees or charges for the following services or permits:

1. Testing fees
2. Re-testing fees
3. Fee for re-inspection
4. Charges for after-hours inspections or tests.

Addendum

1. Residential dual check

Effective the date of the acceptance of this Cross-Connection Control Program for the Town of () all new residential buildings will be required to install a residential dual check device immediately downstream of the water meter. (Ref. Figure 37 page 24.) Installation of this residential dual check device on a retrofit basis on existing service lines will be instituted at a time and at a potential cost to the homeowner as deemed necessary by the Department.

The owner must be aware that installation of a residential dual check valve results in a potential closed plumbing system within his residence. As such, provisions may have to be made by the owner to provide for thermal expansion within his closed loop system, i.e., the installation of thermal expansion devices and/or pressure relief valves.

2. Strainers

The Department strongly recommends that all new retrofit installations of reduced pressure principle devices and double check valve backflow preventers include the installation of strainers located immediately upstream of the backflow device. The installation of strainers will preclude the fouling of backflow devices due to both foreseen and unforeseen circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning and flushing of mains, etc. These occurrences may “stir up” debris within the water main that will cause fouling of backflow devices installed without the benefit of strainers.

Partial List of Plumbing Hazards

Fixtures with Direct Connections

Sewer, sanitary
Sewer, storm
Swimming pool

Description

Air conditioning, air washer
Air conditioning, chilled water
Air conditioning, condenser water
Air line
Aspirator, laboratory
Aspirator, medical
Aspirator, weedicide and fertilizer sprayer
Autoclave and sterilizer
Auxiliary system, industrial
Auxiliary system, surface water
Auxiliary system, unapproved well supply
Boiler system
Chemical feeder, pot-type
Chlorinator
Coffee urn
Cooling system
Dishwasher
Fire standpipe or sprinkler system
Fountain, ornamental
Hydraulic equipment
Laboratory equipment
Lubrication, pump bearings
Photostat equipment
Plumber's friend, pneumatic
Pump, pneumatic ejector
Pump, prime line
Pump, water operated ejector

Fixtures with Submerged Inlets

Description

Baptismal fountain
Bathtub
Bedpan washer, flushing rim
Bidet
Brine tank
Cooling tower
Cuspidor
Drinking fountain
Floor drain, flushing rim
Garbage can washer
Ice maker
Laboratory sink, serrated nozzle
Laundry machine
Lavatory
Lawn sprinkler system
Photo laboratory sink
Sewer flushing manhole
Slop sink, flushing rim
Slop sink, threaded supply
Steam table
Urinal, siphon jet blowout
Vegetable peeler
Water closet, flush tank, ball cock
Water closet, flush valve, siphon jet

Illustrations of Backsiphonage

The following illustrates typical plumbing installations where backsiphonage is possible.

Backsiphonage

Case I (Fig. 44)

A. Contact Point: A rubber hose is submerged in a bedpan wash sink.

B. Causes of Reversed Flow: (1) A sterilizer connected to the water supply is allowed to cool without opening the air vent. As it cools, the pressure within the sealed sterilizer drops below atmospheric producing a vacuum which draws the polluted water into the sterilizer contaminating its contents. (2) The flushing of several flush valve toilets on a lower floor which are connected to an

undersized water service line reduces the pressure at the water closets to atmospheric producing a reversal of the flow. C. Suggested Correction: The water connection at the bedpan wash sink and the sterilizer should be provided with properly installed backflow preventers.

Backsiphonage

Case 2 (Fig. 45)

A. Contact Point: A rubber hose is submerged in a laboratory sink.

B. Cause of Reversed Flow: Two opposite multi-story buildings are connected to the same water main, which often lacks adequate pressure. The building on the right has installed a booster pump.

FIGURE 44.
Backsiphonage (Case 1).

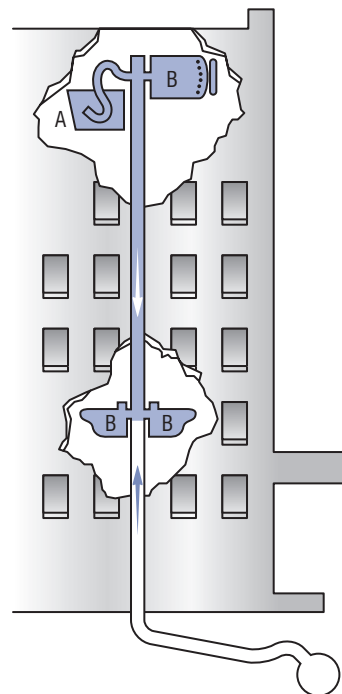
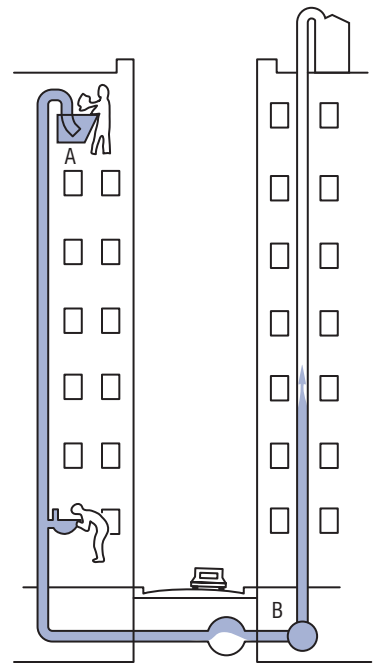


FIGURE 45.
Backsiphonage (Case 2).



When the pressure is inadequate in the main, the building booster pump starts pumping, producing a negative pressure in the main and causing a reversal of flow in the opposite building.

C. Suggested Correction: The laboratory sink water outlet should be provided with a vacuum breaker. The water service line to the booster pump should be equipped with a device to cut off the pump when pressure approaches a negative head or vacuum.

Backsiphonage

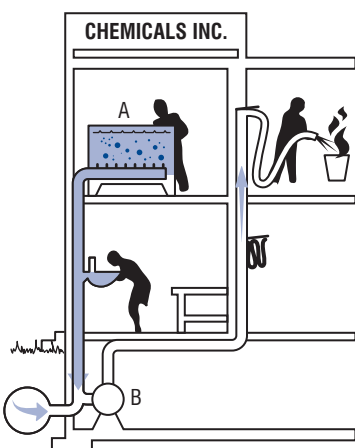
Case 3 (Fig. 46)

A. Contact Point: A chemical tank has a submerged inlet.

B. Cause of Reversed Flow: The plant fire pump draws suction directly from the city water supply line which is insufficient to serve normal plant requirements and a major fire at the same time. During a fire emergency, reversed flow may occur within the plant.

C. Suggested Correction: The water service to the chemical tank should be provided through an air gap.

FIGURE 46. Backsiphonage (Case 3).



Backsiphonage

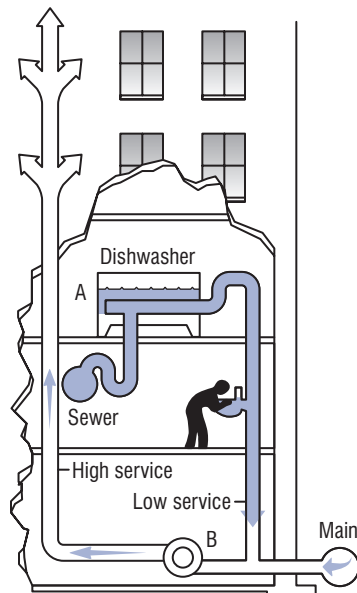
Case 4 (Fig. 47)

A. Contact Point: The water supply to the dishwasher is not protected by a vacuum breaker. Also, the dishwasher has a solid waste connection to the sewer.

B. Cause of Reversed Flow: The undersized main serving the building is subject to reduced pressures, and therefore only the first two floors of the building are supplied directly with city pressure. The upper floors are served from a booster pump drawing suction directly from the water service line. During periods of low city pressure, the booster pump suction creates negative pressures in the low system, thereby reversing the flow.

C. Suggested Correction: The dishwasher hot and cold water should be supplied through an air gap and the waste from the dishwasher should discharge through an indirect waste. The booster pump should be equipped with a low-pressure cutoff device.

FIGURE 47. Backsiphonage (Case 4).



Backsiphonage

Case 5 (Fig. 48)

A. Contact Point: The gasoline storage tank is maintained full and under pressure by means of a direct connection to the city water distribution system.

FIGURE 48. Backsiphonage (Case 5).

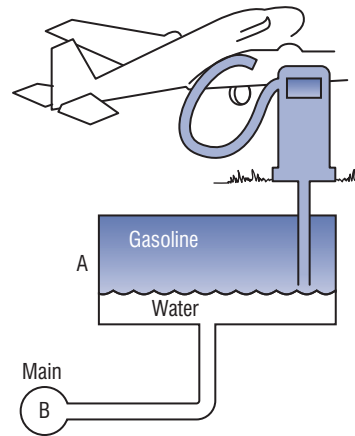
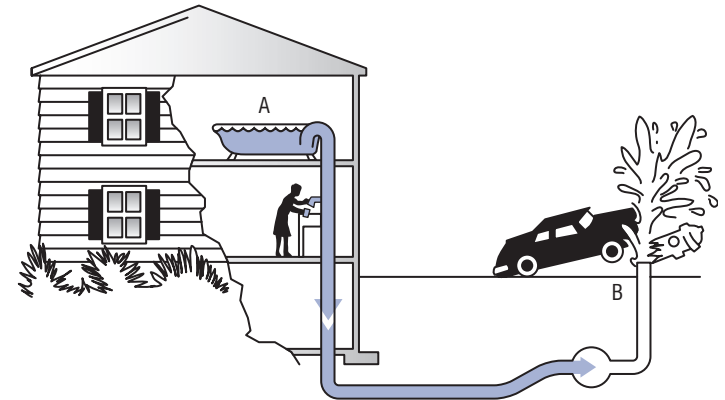


FIGURE 49. Backsiphonage (Case 6).



B. Cause of Reversed Flow: Gasoline may enter the distribution system by gravity or by siphonage in the event of a leak or break in the water main.

C. Suggested Correction: A reduced pressure principle backflow preventer should be installed in the line to the gasoline storage tank or a surge tank and pump should be provided in that line.

Backsiphonage

Case 6 (Fig. 49)

A. Contact Point: There is a submerged inlet in the second floor bathtub.

B. Cause of Reversed Flow: An automobile breaks a nearby fire hydrant causing a rush of water and a negative pressure in the service line to the house, sucking dirty water out of the bathtub.

C. Suggested Correction: The hot and cold water inlets to the bathtub should be above the rim of the tub.

Illustrations of Backpressure

The following presents illustrations of typical plumbing installations where backflow resulting from backpressure is possible.

Backflow

Case I (Fig. 50)

A. Contact Point: A direct connection from the city supply to the boiler exists as a safety measure and for filling the system. The boiler water system is chemically treated for scale prevention and corrosion control.

B. Cause of Reversed Flow: The boiler water recirculation pump discharge pressure or backpressure from the boiler exceeds the city water pressure and the chemically treated water is pumped into the domestic system through an open or leaky valve.

C. Suggested Correction: As minimum protection two check valves in series should be provided in the makeup waterline to the boiler system. An air gap separation or reduced pressure principle backflow preventer is better.

FIGURE 50. Backflow (Case 1).

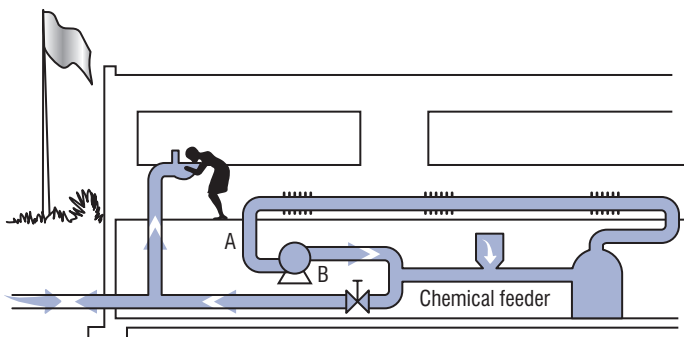
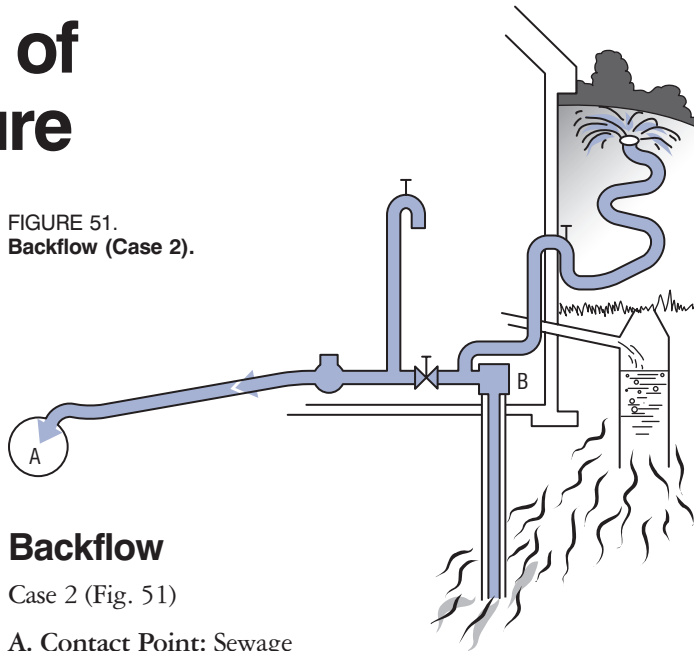


FIGURE 51. Backflow (Case 2).



Backflow

Case 2 (Fig. 51)

A. Contact Point: Sewage seeping from a residential cesspool pollutes the private well which is used for lawn sprinkling. The domestic water system, which is served from a city main, is connected to the well supply by means of a valve. The purpose of the connection may be to prime the well supply for emergency domestic use.

B. Cause of Reversed Flow: During periods of low city water pressure, possibly when lawn sprinkling is at its peak, the well pump discharge pressure exceeds that of the city main and well water is pumped into the city supply through an open or leaky valve.

C. Suggested Correction: The connection between the well water and city water should be broken

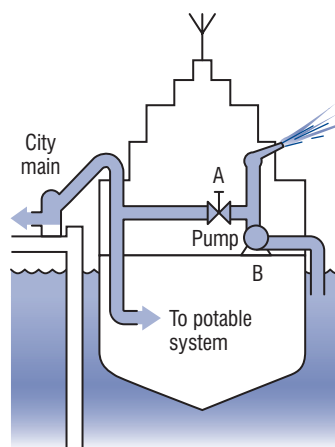
Backflow

Case 3 (Fig. 52)

A. Contact Point: A valve connection exists between the potable and the non-potable systems aboard the ship.

B. Cause of Reversed Flow: While the ship is connected to the city water supply system for the purpose of taking on water for the potable system, the valve between the potable and non-potable systems is opened, permitting contaminated water to be pumped into the municipal supply.

FIGURE 52. Backflow (Case 3).



C. Suggested Correction: Each pier water outlet should be protected against backflow. The main water service to the pier should also be protected against backflow by an air gap or reduced pressure principle backflow preventer.

Backflow

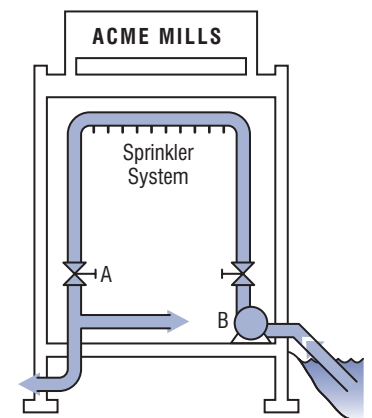
Case 4 (Fig. 53)

A. Contact Point: A single-valved connection exists between the public, potable water supply and the fire-sprinkler system of a mill.

B. Cause of Reversed Flow: The sprinkler system is normally supplied from a nearby lake through a high-pressure pump. About the lake are large numbers of overflowing septic tanks. When the valve is left open, contaminated lake water can be pumped to the public supply.

C. Suggested Correction: The potable water supply to the fire system should be through an air gap or a reduced pressure principle backflow preventer should be used.

FIGURE 53. Backflow (Case 4).



Illustrations of Air Gaps

The following illustrations describe methods of providing an air gap discharge to a waste line which may be occasionally or continuously subject to backpressure.

FIGURE 54.
Air gap to sewer subject to backpressure—force main.

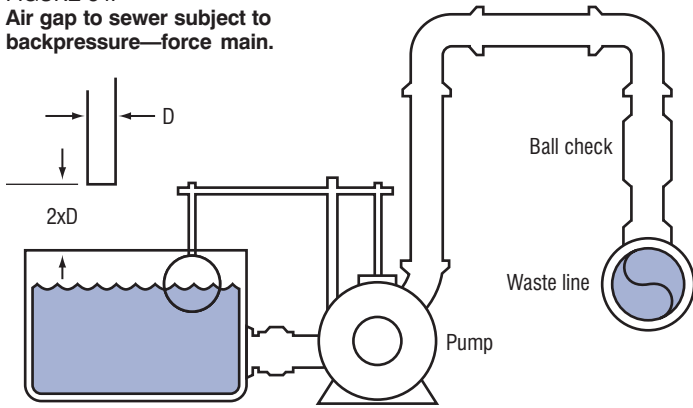


FIGURE 55.
Air gap to sewer subject to backpressure—gravity drain.

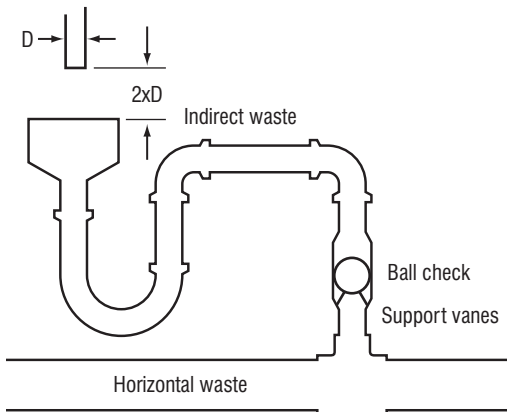
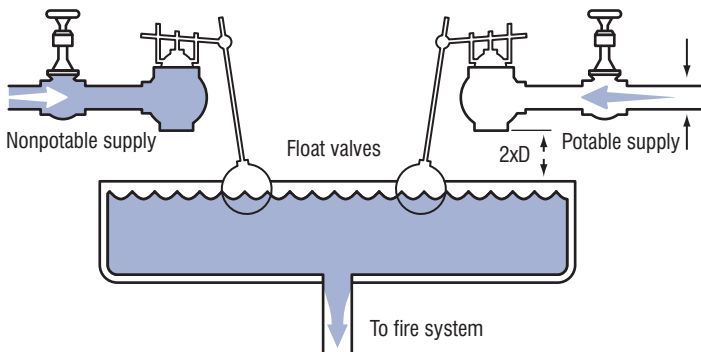


FIGURE 56.
Fire system makeup tank for a dual water system.



Illustrations of Vacuum Breakers

FIGURE 57.
Vacuum breakers.

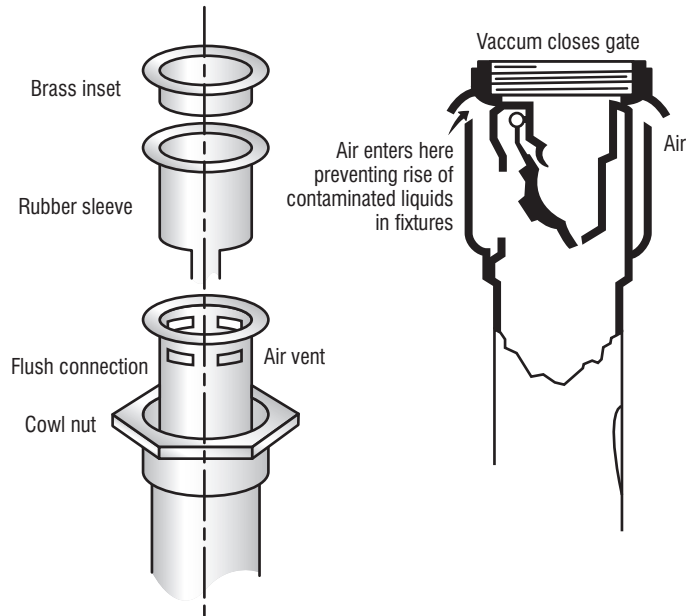
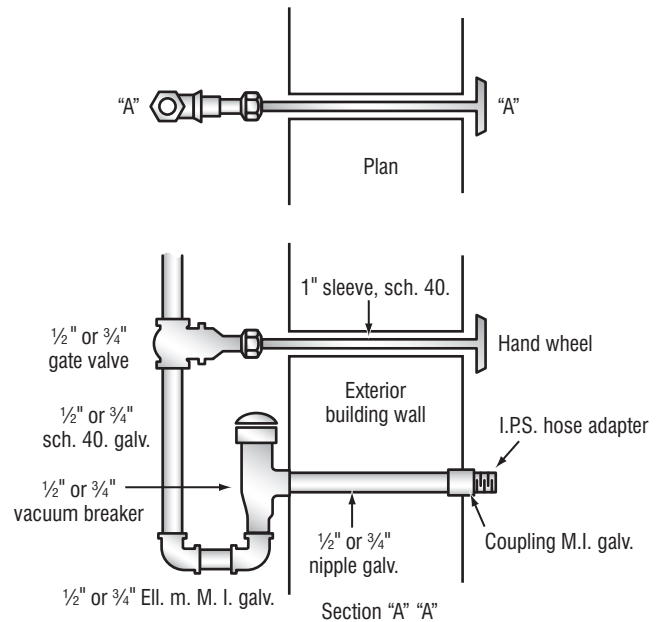


FIGURE 58.
Vacuum breaker arrangement for an outside hose hydrant.



(By permission of Mr. Gustave J. Angele Sr., P.E. formerly Plant Sanitary Engineer, Union Carbide Nuclear Division, Oak Ridge, Tenn.)

Glossary

Air gap The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood-level rim of the receptacle.

Backflow The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any source or sources other than its intended source. Backsiphonage is one type of backflow.

Backflow Connection Any arrangement whereby backflow can occur.

Backflow Preventer A device or means to prevent backflow. Backflow Preventer, Reduced Pressure Principle Type An assembly of differential valves and check valves including an automatically opened spillage port to the atmosphere.

Backsiphonage Backflow resulting from negative pressures in the distributing pipes of a potable water supply.

Cross-Connection Any actual or potential connection between the public water supply and a source of contamination or pollution.

Effective Opening The minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of (1) diameter of a circle, or (2) if the opening is not circular, the diameter of a circle or equivalent cross-sectional area.

Flood-Level Rim The edge of the receptacle from which water overflows.

Flushometer Valve A device which discharges a predetermined quantity of water to fixtures for flushing purposes and is actuated by direct water pressure.

Free Water Surface A water surface that is at atmospheric pressure.

Frostproof Closet A hopper with no water in the bowl and with the trap and water supply control valve located below frost line.

Indirect Waste Pipe A drain pipe used to convey liquid wastes that does not connect directly with the drainage system, but which discharges into the drainage system through an air break into a vented trap or a properly vented and trapped fixture, receptacle, or interceptor.

Plumbing The practice, materials, and fixtures used in the installation, maintenance, extension, and alteration of all piping, fixtures, appliances and appurtenances in connection with any of the following: sanitary drainage or storm drainage facilities, the venting system and the public or private water-supply systems, within or adjacent to any building, structure, or conveyance; also the practice and materials used in the installation, maintenance, extension, or alteration of storm water, liquid waste, or sewerage, and water-supply systems of any premises to their connection with any point of public disposal or other acceptable terminal.

Potable Water Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects. Its bacteriological and chemical quality shall conform to the requirements of the USEPA National Primary Drinking Water Regulations and the regulations of the public health authority having jurisdiction.

Vacuum Any absolute pressure less than that exerted by the atmosphere.

Vacuum Breaker A device that permits air into a water supply distribution line to prevent backsiphonage.

Water Outlet A discharge opening through which water is supplied to a fixture, into the atmosphere (except into an open tank which is part of the water supply system), to a boiler or heating system, to any devices or equipment requiring water to operate but which are not part of the plumbing system.

Water Supply System The water service pipe, the water-distributing pipes, and the necessary connecting pipes, fittings, control valves, and all appurtenances in or adjacent to the building or premises. The water supply system is part of the plumbing system.

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Cross-Connection Survey Form

Date: _____

Name of Company, Corporation, or Business: _____

Address: _____

Name of Contact: _____

Type of Use: Industrial _____ Commercial _____ Governmental _____ Other _____

Location of Service: _____

Size of Service: _____ Inch Metered? Yes No

Require non-interrupted water service? Yes No

Does Boiler Feed utilize chemical additives? Yes No

Is Backflow protection incorporated? Yes No

Are air conditioning cooling towers utilized? Yes No

Is Backflow protection incorporated? Yes No

Is a Water Saver utilized on condensing lines or cooling towers? N/A Yes No

Is the make-up supply line backflow protected? Yes No

Is process water in use, and if so, is it potable supply water or "Raw" water
Raw Protected Potable
Unprotected

Is fire protection water separate from the potable supply? Yes No

Are Containment Devices in place? Yes No

Summary

Degree of Hazard: High Low

Type of Device recommended for containment: RPZ DCV None

Fixture Outlet protection required? Yes No

If so, where?

Backflow Prevention Device Test and Maintenance Report

To: _____
(water purveyor or regulatory agency)

Attn: Cross-connection Control Section

The cross-connection control device detailed hereon has been tested and maintained as required by the (rules or regulations) of (purveyor or regulatory agency) and is certified to comply with these (rules or regulations).

Make of device _____ size _____
 Model Number _____ located at _____
 Serial Number _____

	Reduced Pressure Devices			Pressure Vacuum Breaker	
	Double Check Devices		Relief Valve	Air Inlet	Check Valve
	1 st Check	2 nd Check			
Initial Test	DC - Closed Tight <input type="checkbox"/> RP - _____ psid Leaked <input type="checkbox"/>	Closed Tight <input type="checkbox"/> Leaked <input type="checkbox"/>	Opened at _____ psid	Opened at _____ psid Did not open <input type="checkbox"/>	_____ psid Leaked <input type="checkbox"/>
Repairs and Materials Used					
Test After Repair	DC-Closed Tight RP- _____ psid	Closed Tight <input type="checkbox"/>	Opened at _____ psid	Opened at _____ psid	_____ psid

The above is certified to be true.

Firm Name _____ Certified Tester _____

Firm Address _____ Cert. Tester No. _____ Date _____



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Office of Water (4606M)
EPA 816-R-03-002
www.epa.gov/safewater
February 2003

2. Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks - US EPA



Office of Water (4601M)
Office of Ground Water and Drinking Water
Distribution System Issue Paper

Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks

September 27, 2001

PREPARED BY:

U.S. Environmental Protection Agency
Office of Ground Water and Drinking Water
Standards and Risk Management Division
1200 Pennsylvania Ave., NW
Washington DC 20004

Background and Disclaimer

The USEPA is revising the Total Coliform Rule (TCR) and is considering new possible distribution system requirements as part of these revisions. As part of this process, the USEPA is publishing a series of issue papers to present available information on topics relevant to possible TCR revisions. This paper was developed as part of that effort.

The objectives of the issue papers are to review the available data, information and research regarding the potential public health risks associated with the distribution system issues, and where relevant identify areas in which additional research may be warranted. The issue papers will serve as background material for EPA, expert and stakeholder discussions. The papers only present available information and do not represent Agency policy. Some of the papers were prepared by parties outside of EPA; EPA does not endorse those papers, but is providing them for information and review.

Additional Information

The paper is available at the TCR web site at:

http://www.epa.gov/safewater/disinfection/tcr/regulation_revisions.html

Questions or comments regarding this paper may be directed to **TCR@epa.gov**.

Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks

An Issues Paper

by

EPA's Office of Ground Water and
Drinking Water

1.0 Nature and Purpose of the Paper

This paper is one of nine papers that examine issues related to drinking water distribution systems. The nine papers are products of two expert workshops. The first workshop, in June 2000, discussed issues associated with distribution systems that may pose public health risks and identified those issues of most concern. The distribution system issues of most concern identified at the workshop are the following: Microbial Growth and Biofilms; Cross-Connections and Backflow; Intrusion; Corrosion and Aging Infrastructure; Decay of Water Quality over Distribution System Residence Time; Contamination During Infrastructure Repair and Replacement; Nitrification; Covered Storage; and Permeation and Leaching. The second workshop, in March 2002, discussed the first drafts prepared on those issues.

In support of the nine distribution system issue papers, EPA developed two tables that list many of the biological and chemical contaminants represented in the papers and their potential health effects: the Microbial Contaminant Health Effects Table (for acute and chronic health effects) and the Chemical Contaminant Health Effects Table (for chronic health effects). For those contaminants mentioned in this paper and included in these tables, a reference to the tables is provided for further information on potential health effects.

The purpose of this document is to review existing literature, research, and information on the occurrence, magnitude, and nature of the public health risks associated with cross-connections and backflow, from both acute and chronic exposures, and methods for detecting and controlling the occurrence of cross-connections and backflow within distribution systems. More specifically, the goal of this document is to review what we know regarding: (1) causes of contamination through cross-connections; (2) the magnitude of risk associated with cross-connections and backflow; (3) costs of backflow contamination incidents; (4) other problems associated with backflow incidents; (5) suitable measures for preventing and correcting problems caused by cross-connections and backflow; (6) possible indicators of a backflow incident; and (7) research opportunities.

2.0 Executive Summary

Within distribution systems there exist points called cross-connections where nonpotable water can be connected to potable sources. These cross-connections can provide a pathway for backflow of nonpotable water into potable sources. Backflow can occur either because of reduced pressure in the distribution system (termed backsiphonage) or the presence of increased pressure from a nonpotable source (termed backpressure). Backsiphonage may be caused by a variety of circumstances, such as main breaks, flushing, pump failure, or emergency firefighting water drawdown. Backpressure may occur when heating/cooling, waste disposal, or industrial manufacturing systems are connected to potable supplies and the pressure in the external system exceeds the pressure in the distribution system. Both situations act to change the direction of water, which normally flows from the distribution system to the customer, so that nonpotable and potentially contaminated water from industrial, commercial, or residential sites flows back into the distribution system through a cross-connection. During incidents of backflow, these chemical and biological contaminants have caused illness and deaths, with contamination affecting a number of service connections. The number of incidents actually reported is believed to be a small percentage of the total number of backflow incidents in the United States.

The risk posed by backflow can be mitigated through preventive and corrective measures. For example, preventative measures include the installation of backflow prevention devices and assemblies

and formal programs to seek out and correct cross-connections within the distribution system and, in some cases, within individual service connections. Corrective measures include activities such as flushing and cleaning the distribution system after a detected incident. These may help mitigate any further adverse health effects from any contaminants that may remain in the distribution system.

3.0 Definition of Key Terms

A cross-connection is a point in a plumbing system where it is possible for a nonpotable substance to come into contact with the potable drinking water supply (BMI, 1999). According to the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research (USC FCCCHR) (1993), a cross-connection means,

“any unprotected actual or potential connection or structural arrangement between a public or private potable water system, and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluids, gas, or substance other than the intended potable water with which the potable system is supplied.”

Common examples of cross-connections include a garden hose submerged in a pesticide mixture, a piped connection providing potable feed water to an industrial process, such as a cooling tower, or a submerged outlet of an irrigation system. Connections to firefighting equipment are other very common cross-connections. Most cross-connections occur beyond the customer service connection, within residential, commercial, institutional or industrial plumbing systems. Identifying cross-connections can be challenging because many distribution systems are expanding to serve new customers and changing to accommodate customer needs. Further, temporary and permanent cross-connections can be created in existing facilities without the knowledge of the water system managers and operators.

Backflow is any unwanted flow of used or nonpotable water, or other substances from any domestic, industrial, or institutional piping system back into the potable water distribution system¹ (USC FCCCHR, 1993). The direction of flow under these conditions is opposite to that of normal flow. The reverse pressure gradient that leads to backflow is caused by either backsiphonage or backpressure (USC FCCCHR, 1993; BMI, 1996).

Backsiphonage is backflow caused by negative or sub-atmospheric pressure in a portion of the distribution system or the supply piping (USC FCCCHR, 1993). When the system pressure drops to below atmospheric (negative gauge pressure), ambient pressure on the distribution system due to the atmosphere, water columns (from buildings or other elevated piping), or other sources will cause the direction of flow within portions of the system to reverse. If a cross-connection exists in the area where flow reverses direction, contaminants can be siphoned into the distribution system (USC FCCCHR, 1993). Water main breaks, firefighting efforts, high demands, and any situation where water is withdrawn from the distribution system at a high rate can lead to backsiphonage (USC FCCCHR, 1993).

Backpressure can cause backflow to occur when a potable system is connected to a nonpotable supply operating under a higher pressure than the distribution system by means of a pump, boiler, elevation difference, air or steam pressure, or other means (USC FCCCHR, 1993). Unlike

¹This paper defines the distribution system to be from the point at which the water leaves the treatment plant, or source, if untreated, to the point at which the customer's service line begins.

backsiphonage, it is not necessary to have a drop in distribution system pressure for backpressure to occur. Whenever the pressure at the point of a cross-connection exceeds the pressure of the distribution system, the direction of flow will reverse. There is a high risk that nonpotable water will be forced into the potable system whenever these connections are not properly protected (USC FCCCHR, 1993).

4.0 What Causes Contamination Through Cross-Connections to Occur?

This section of the paper describes how cross-connections and backflow occur, and what conditions and situations are necessary to cause them. Under intended flow conditions, distribution systems are pressurized to deliver finished water from the treatment plant to the customer. However, two situations can cause the direction of flow to reverse: pressure in the distribution system can drop due to various conditions or an external system connected to the distribution system may operate at a higher pressure than the distribution system. These differences in pressure can cause contaminants to be drawn or forced into the distribution system. Contamination introduced due to backflow into the distribution system may then flow freely into other customer connections. The following conditions must be present for contamination to occur through cross-connections.

- A cross-connection exists between the potable water distribution system and a nonpotable source.
- The pressure in the distribution system either becomes negative (backsiphonage), or the pressure of a contaminated source exceeds the pressure inside the system (backpressure).
- The cross-connection is not protected, or the connection is protected and the mechanism failed, allowing the backflow incident.

The extent of contamination in the distribution system depends, in part, on the location of the cross-connection, the concentration of the contaminant entering the distribution system and the magnitude and duration of the pressure difference causing the backflow. This section of the paper describes the theory of backflow and cross-connections, provides examples of conditions that can create backflow, and lists a number of factors that affect the likelihood and magnitude of backflow through a cross-connection.

4.1 Backflow Conditions

The occurrence of backflow is directly related to system pressure. Any pressure differential between the potable water and the non-potable source can lead to backflow. It is estimated that even well-run water distribution systems experience about 25–30 breaks per 100 miles of piping per year (Deb et al., 1995). Haas (1999) reported results from a survey of water systems that showed a range of average main breaks of 488 per year for systems serving more than 500,000 people, to 1.33 per year for systems serving fewer than 500 people.

Fighting fires also reduces a system's pressure (AWWA, 1999). For example, in 1974 in Washington State, the high rate of flow caused by the activation of a fire deluge system reduced pressure in a domestic water line, causing backsiphonage of a chemical and other pollutants into the potable water system (AWWA PNWS, 1995). Similarly, opening hydrants during the summer for recreational use causes pressure to drop. Regular system maintenance activities such as valve exercising programs, hydrant flushing, pump repair, pressure control valve repair, and valve replacement can also result in

localized variations in pressure that cause backflow. Differences in elevation can compound the effects of pressure loss.

Additionally, if a high pressure source is connected to the distribution system, a drop in pressure is not necessary for backflow to occur—the presence of a cross-connection or failure of the prevention mechanism will allow backflow to occur.

Examples of backsiphonage

Elevated piping can cause backsiphonage when there is a loss of pressure in the supply system. The loss of pressure will cause the water column to collapse and create a vacuum that can draw contaminants in through a cross-connection (BMI, 1999; USC FCCCHR, 1993). Backsiphonage can also occur within irrigation systems. For example, in 1991, a water main break led to the backsiphonage of parasitic worms from a residential lawn sprinkler supply into two homes (AWWA PNWS, 1995).

Booster pumps for high-rise buildings can cause backsiphonage if the suction lines of the pumps are being used for service on the lower floors and a temporary or permanent cross-connection on the lower floors exists (e.g., a hose submerged in a bucket of cleaning solution). If distribution system pressure drops, the suction pressure can cause the backsiphonage through the lower floor cross-connection when the pump is operating, contaminating the higher floors (BMI, 1999; USC FCCCHR, 1993; US EPA, 1989).

Localized physical restrictions in water lines can produce backsiphonage through the venturi effect (BMI, 1999). When water flows through a restriction—for example, through a garden hose or from a larger water line into a smaller one—its velocity increases and its pressure decreases proportionately (US EPA, 1989). This decrease in pressure can yield negative pressure and siphon substances into the point of restriction (BMI, 1999). Devices such as chemical sprayers used on the end of garden hoses use this principle to siphon chemical from the container into the water stream (BMI, 1996).

Backsiphonage can occur when supply piping within an industrial facility is elevated over the rim of a vessel, and the outlet of that piping is submerged in a liquid contaminant. Negative distribution system pressure would cause the water column in the elevated pipe section to collapse, creating a vacuum that draws contaminants from the vessel into the distribution system (BMI, 1999; USC FCCCHR, 1993).

If a pipe with cracks or leaking joints is exposed to a wet environment, negative pressure can cause water to be drawn in (or to intrude into) the distribution system through backsiphonage (Kirmeyer et al., 2001). A separate issue paper addresses risks from intrusion due to pressure transients.

Examples of backpressure

Backpressure can occur with pressurized residential, industrial, institutional, or commercial systems which use pumps, including chemical feed pumps or booster pumps, or pressurized auxiliary water systems for irrigation, fire protection, car washes, and cooling systems (USC FCCCHR, 1993; FDEP, 2001). For example, backpressure resulting from tank cleaning activities by a gas company in Connecticut caused propane to backflow into the distribution system, causing fires in two homes and evacuation of hundreds of people. Gas company workers were purging a propane tank with water and did not realize the pressure in the tank was greater than in the water line feeding the tank, thus creating a backpressure of propane vapor into the distribution system (US EPA, 1989). Backpressure also occurred in 1991 at a facility that transforms wheat and barley into ethanol in Tucumcari, New Mexico. An unprotected auxiliary water line feeding emergency fire cannons was illegally tapped to a hose connected

to an ethanol plant's flushing system, creating a cross-connection. After the plant finished its flushing operation, the plant resumed normal operations with the hose still connected, and backpressure from plant operations forced a number of industrial chemicals to backflow into the public water supply (toluene, phenol, benzene, ethanol, nonanoic acid, decanoic acid, octanol, octanoic acid, heptanoic acid, butanoic acid, silicon, diconic acid and four trihalomethanes). The concentrations of these toxins were enough to cause the mayor of the town to become very ill for 48 hours. Another individual drank a small amount of water and became ill with stomach upset. Fortunately, there were no deaths, and the distribution system was thoroughly flushed after the contamination was detected (AWWA PNWS, 1995). The likelihood of backpressure increases when the distribution system pressure drops to below normal operating pressure due to changes in valve setting, pipeline breaks, air valve slams, loose-fitting service meter connections, surge or feed tank draining, or a sudden change in demand (Kirmeyer et al., 2001).

The weight of water in piping of high-rise buildings is a source of backpressure on the distribution system. Backpressure can also come from thermal expansion (high pressures can be generated when water is heated in a closed container). Thermal expansion can occur in boilers, solar heating systems, and places where water- or foam-based fire sprinkler systems are located on the highest floors of tall buildings and temperatures of piping rise (BMI, 1999).

Compressed air systems such as carbonators can pose backpressure risks. The pressure of a carbon dioxide tank, for example, can be several thousand pounds per square inch (psi). This high-pressure carbon dioxide is passed through a regulator and mixed into a water system at anywhere from 60 to 150 psi. Carbon dioxide from either a tank or a regulator could be introduced to the distribution system pressure if a cross-connection is present and the compressed air system overcomes the distribution system pressure (Guy, 1997).

4.2 Factors Affecting the Occurrence and Magnitude of Backflow Contamination

Operating pressure

A minimum operating pressure of 20 psi at all locations in a distribution system is suggested by various manuals and codes of good operating practice (Kirmeyer et al., 2001). Some states also have minimum operating pressure requirements. Local operating pressure in a system varies among zones. In a highly pressurized system, a great deal of backpressure would be needed to force water to backflow; a system or part of a system with relatively low pressure would generally be more susceptible to backpressure. Systems with normal operating pressure lower than recommended by manuals and codes of good practice may have a higher risk of backpressure events.

Reduced pressures that can lead to backflow occur from a variety of sources. Water main breaks, hilly terrain, limited pumping capacity, high demand by consumers, fire fighting flows, rapidly opening or closing a valve within the distribution system, power loss, and hydrant flushing can reduce pressure and contribute to lower or extremely fluctuating water pressures (Kirmeyer et al., 2001). A study of a distribution system (LeChevallier et al., 2001) observed that during a pump test, routine operation, and a power outage, pressures as low as -10.1 psi were recorded, with durations ranging from 16 to 51 seconds. During these times of negative pressure, the chance that water external to the distribution system intruded into the distribution system due to backsiphonage or backpressure increased. In a simple single pipe model employed in the study, a surge generated by a simulated power failure to a pump predicted 69 gallons of external water would intrude into the pipe within 60 seconds. A surge caused by a main break predicted 78 gallons of water intruding within 60 seconds. A survey of 70 systems reported 11,186 pressure reduction incidents in the past year; 34.8 percent of the incidents were from routine

flushing, 19.2 percent were due to main breaks, and 16.2 percent incidents were due to service line breaks (ABPA, 2000). Hills and other elevations compound pressure loss effects caused by main breaks, fire flows, and other events (ABPA, 2000). Limited pumping capacity may cause periodic termination of water supply in areas of the system. Without sufficient redundancy in the distribution system, backsiphonage conditions may occur if one or more major components of the distribution system go offline or otherwise cease functioning.

Physical security of the distribution system

Homeland security initiatives include attention to the physical security of water distribution systems. The subject of homeland security is well beyond the scope of this paper, but it is relevant to note that the potential for intentional contamination of a distribution system through cross-connections and backflow of chemical and biological contaminants is possible (Dreazen, 2001).

Maintenance activities

Maintenance levels and practices within the distribution system can affect the likelihood of occurrence of cross-connections and backflow. In a South Carolina system in 1978 fifteen people became ill due to backsiphonage of chlordane from an exterminator truck during meter repair (USC FCCCHR, 1993). In May, 1982 maintenance crews in Bancroft, Michigan shut down a main to replace a valve. The resultant pressure loss caused backflow of malathion from a hose end applicator, and resulted in the loss of water to the village for two days (USC FCCCHR, 1993). The herbicide Lexon DF backsiphoned into the distribution system in Gridley, Kansas in 1987 from a tanker truck when a main broke during excavation and contaminated ten residences and one business (USC FCCCHR, 1993).

Levels of public awareness

A lack of public awareness about the threat posed by cross-connections and backflow can lead to unintentional creation of cross-connections, such as through illegal and unprotected taps into the distribution system. In 1979, a professional exterminator left a garden hose submerged in a barrel of diluted pesticide, allowing chlordane to be backsiphoned into the distribution system during a service interruption (US EPA, 1989). This potential is magnified in multi-storied buildings that have many people living under one primary connection. Cross-connections are often installed by the public as a matter of convenience without regard to possible dangers, and others with reliance on inadequate backflow prevention (US EPA, 1989).

5.0 The Magnitude of Risk Associated with Cross-Connections and Backflow

This section describes the risk posed by contaminants that can enter the distribution system through cross-connections. The history of outbreaks and reported illnesses associated with cross-connections and backflow indicates some level of public health risk is associated with cross-connections and backflow. Risk is a function of a variety of factors including cross-connection and backflow occurrence, type and amount of contaminants, and their potential health effects. This section first describes the reported outbreaks of disease associated with cross-connections and backflow, then follows with a description of some contaminants that have been introduced to distribution systems via cross-connections and backflow, and the difficulties in detecting and reporting backflow incidents.

5.1 Reported Outbreaks Associated with Cross-Connections and Backflow

From 1981 to 1998, CDC documented 57 waterborne disease outbreaks related to cross-connections, resulting in 9,734 illnesses. These include 20 outbreaks (6,333 cases of illness) caused by

microbiological contamination, 15 outbreaks (679 cases of illness) caused by chemical contamination, and 22 outbreaks (2,722 cases of illness) where the contaminant was not reported. Craun and Calderon (2001) report that 30.3 percent of waterborne disease outbreaks in community water systems during 1971-1998 were caused by contamination of water in the distribution systems. Of these waterborne disease outbreaks caused by distribution system deficiencies, 50.6 percent were due to cross-connection and backflow (Craun and Calderon, 2001). Documented acute health impacts most often involve gastrointestinal disorders. The data from the CDC's surveillance of the outbreak of waterborne disease must meet certain documentation standards; therefore, these reports are reliable. However, CDC's reporting standards exclude some incidents that lack complete documentation and report only outbreaks of notifiable diseases (a set of diseases that CDC tracks; these do not include endemic diseases). As a result, these data are likely under-estimates and these under-estimates are compounded by the number of illnesses that go unreported. (Section 5.4 further discusses the difficulties of detecting and reporting waterborne disease outbreaks.)

Estimates of the proportion of waterborne illness attributable to cross-connections and backflow vary. A compilation by EPA's Health Effects Research Laboratory found that between 1920 and 1980, cross-connections and backflow caused 78 percent of outbreaks, and 95 percent of the cases of illness, attributed to community distribution system contamination in the United States (AWWA, 1990).

Data on health impacts are also available from other sources that collect information on backflow incidents, such as USC FCCCHR, and the Cross-Connection Control Committee of the Pacific Northwest Section of the AWWA. These independent organizations do not limit their data to well-defined outbreaks, but focus on incidents. Because not all incident reports document illness, estimates of illness resulting from an individual incident based on their data are less reliable than CDC estimates of reported outbreaks.

Our compilation of backflow incident data (summarized in Exhibit 5.1) found that 459 incidents resulted in an estimated 12,093² illnesses from 1970 to 2001. When we narrowed the analysis to 1981-1999, for comparison with CDC data on outbreaks for that period, we found that only 97 of 309 incidents produced reports of how many (if any) illnesses were caused, and 22 of these 97 incidents reported no illnesses. Of the remaining 75 incidents, only 26 appear in CDC's summaries as a waterborne disease outbreak. This suggests that CDC data underreport even known instances of illness caused by backflow contamination. From the 75 incidents that produced reports of illness, analysis of the qualitative and quantitative case reports estimated 4,416 illnesses, averaging 46 illnesses per outbreak.

5.2 Contaminants Associated with Cross-Connections and Backflow and Their Health Effects

A variety of contaminants have been introduced into distribution systems by cross-connections and backflow, indicated by the backflow occurrence discussed in this paper. The likelihood and severity of illness and number of people affected depend on various factors including how much contamination

²If the number of illnesses was reported qualitatively, the analysis used the following assumptions to estimate a total figure. Specifically, if the number of illnesses was reported as "several", "many", or "numerous", the analysis assumed five. The analysis assumed that "some" meant three. One incident reported "dozens" of illnesses this analysis assumed 36. Another reported one family the analysis assumed three people.

enters the system, the dilution factor, the type of contaminant, the number of users exposed, and the health status of each person at the time of exposure.

Contamination from cross-connections and backflow can occur not only where the cross-connection is located but at sites upstream and downstream, as contaminants spread. The fate and transport of a contaminant are often system-specific and can be difficult to predict because they depend on multiple parameters such as the hydraulics of the distribution system and the physical, chemical, or biological properties of the contaminant. The contaminant may remain as a slug, resulting in very high concentrations in localized areas, or it may disperse, contaminating large volumes of water at lower concentrations. It may adsorb to the interior of pipes, necessitating their cleaning or replacement. It may degrade, or in the case of microorganisms, be inactivated or injured by residual disinfectant. It may also become concentrated within the biofilms and be slowly released through erosion or as a slug through biofilm sloughing. Scales within the piping may adsorb the contaminants for later release.

The Chemical and Microbial Health Effects Tables, developed by EPA to support the nine issue papers, include many biological and chemical contaminants mentioned in the papers. However, additional contaminants not listed in these tables are described in this paper because the types of contaminants that have entered distribution systems through cross-connections are numerous and not discussed in any other white papers; thus more appropriately described in this paper. For those contaminants listed in the Health Effects Tables, this paper references the appropriate table for more information on potential health effects.

5.2.1 Chemical Contaminants

The use of chemicals at residential, industrial, and commercial facilities with direct or indirect connections to potable water systems presents an opportunity for contamination from cross-connections and backflow (USC FCCCHR, 1993). Many of these chemicals have some degree of toxicity, and exposure to these chemicals can have either acute or long-term health effects, depending on the nature and concentration of the contaminant, duration of exposure, and a person's immune status. Exposure from contamination through a cross-connection can be either acute or chronic. While waterborne outbreaks are under-reported in general, rarely are waterborne chemical outbreaks reported to CDC. The reasons for under-reporting of chemical outbreaks above and beyond that of microbial outbreaks include: 1) most poisonings of this nature (e.g., lead and copper from plumbing) probably occur in private residences, affect relatively few people and, thus, may not come to the attention of public health officials; 2) exposure to chemicals via drinking water may cause illness that is difficult to attribute to chemical intoxication, or it may cause non-specific symptoms that are difficult to link to a specific agent; and 3) the chemical outbreak detection mechanisms, as well as the reporting requirements are not as well established as they are for microbial agents (CDC, 1996). Most reported incidents are acute exposures, however, chronic exposures are possible if immediate water quality or health effects are not noticed, or if cross-connections remain uncorrected long-term. This can result in some of the chronic health effects described in the Chemical Health Effects Table (USEPA, 2002a), when the consumer is exposed to the chemicals listed for a long period of time. Depending on the contaminant, these chronic exposures can cause long-term health effects, including cancer, which may not be identified until many years after the initial exposure. Acute health risks include vomiting, burns, poisoning, and other reactions—some potentially life-threatening. For example, in Rochester, NY, a faulty carbonation system on a soft drink machine continuously leaked carbon dioxide into the distribution system for over 3 months, creating increased levels of copper in the distribution system (as high as 13,400 ppb) (Manioci, 1984). Contamination at the K-25 atomic bomb plant in Oak Ridge, TN, occurred for an unknown length of time (possibly on the order of decades) through cross-connections with cooling system and firefighting

lines. Contaminants found at the source of contamination that may have entered the distribution system included strontium-90, arsenic, chromium, and antifreeze (Nashville Tennessean, 2000).

Because few backflow incidents are reported, it is important to note that a variety of chemicals have the potential to enter the distribution system through cross-connections, and the number of those reported only represent a subset. For example, agricultural applications contain many fertilizers, herbicides, and insecticides and industrial sources such as cooling systems, plating plants, steam boiler plants, and dye plants have a number of toxic chemicals in day-to-day use that have the potential to contaminate the distribution system (USC FCCCHR, 1993). The most common chemical contaminants reported, according to information EPA has obtained from backflow incident records, are (in order of decreasing occurrence): copper, chromium, ethylene glycol, detergents, chlordane, malathion, propylene glycol, freon, and nitrite. Chlordane and malathion are pesticides; ethylene glycol is used as antifreeze in heating and cooling systems, propylene glycol is used as antifreeze and as a food additive; detergents are extensively used in many industries; copper is used in plumbing; chromium VI was used in the past in cooling towers as a rust and corrosion inhibitor; and nitrite is a reduced form of nitrate, an agricultural fertilizer. This summary discusses these and other related chemical contaminants (grouped into four categories—pesticides, metals, synthetic organic compounds, and nitrates and nitrites) in terms of potential health effects and examples of reported backflow incidents.

Pesticides

Pesticides (including insecticides, herbicides, and fungicides) as a group are contaminants in 45 reported incidents. Chlordane, malathion, heptachlor, and diazinon were reported as contaminants in 11, 5, 3, and 2 incidents, respectively. In one 1976 incident in Chattanooga, TN, chlordane was being used for termite extermination and contaminated a three-block area of residential homes; 17 people reported they drank the suspect water. Reported symptoms by those people were nausea, abdominal pain, gastrointestinal problems, and neurological effects such as dizziness, blurred vision, irritability, headache, paresthesia, muscle weakness, and twitching (AWWA PNWS, 1995). In 1980, heptachlor and chlordane contaminated a portion of distribution system in Allegheny, PA that serviced approximately 300 people. A pesticide contractor created the cross-connection with a garden hose submerged in the chemical mixing tank. There were no reports of illness, however, residents were without water for 27 days (Watts, 1998). Another pesticide incident involved diazinon contamination in Tucson, AZ in 1989. Diazinon entered the system through a residential connection where a home-made pesticide pump system was hooked up to a garden hose. The combination of backpressure from the pump system and the water use by a next-door neighbor washing a car caused the pesticide to flow into the distribution system (Tucson Citizen, 1989). No illnesses were reported. In 1986, two employees of a Kansas grain mill became ill after drinking water contaminated with malathion that was backsiphoned into the plant's water supply (AWWA PNWS, 1995). In 1988, a Florida man died of insecticide intoxication after he stepped off his mower, filled his water bottle, and drank from the bottle that was filled with contaminated water from a faucet at an airstrip. Officials suspected backflow as the cause of the water supply contamination (AWWA PNWS, 1995).

An example of a small amount of contamination resulting in a public health threat is a 1991 incident where 2.5 gallons of the herbicide TriMec backsiphoned into the Uintah Highlands water system in Utah affecting 2,000 homes (US EPA, 1989). Shortly thereafter, concentrations of the active ingredients, 2,4-D and Dicamba, at a consumer's tap were measured at 638 and 64.8 parts per million (ppm), respectively. This incident also affected a nursing home and a day-care facility, both of which serve higher risk subpopulations. The health advisory level of both 2,4-D and Dicamba over a 10-day period is 0.3 ppm (US EPA, 2000a). Chronic health effects of 2,4-D and Dicamba include damage to the nervous system, kidney, and liver (US EPA, 2002a). However, only acute exposures were documented.

Metals

There are 73 reported backflow incidents with metal contaminants—55 with copper and 18 with hexavalent chromium. Copper contamination is most commonly associated with backflow incidents at restaurants, where carbonated water can dissolve portions of water or soft drink dispenser piping made of copper. In 1987, a child in Minnesota suffered acute copper toxicity when the backflow from a carbon dioxide machine contaminated a restaurant's potable system (AWWA PNWS, 1995). A similar incident at a fair in Springfield, MO, caused vomiting and abdominal pain in three people who drank soft drinks from a soft drink machine that had a faulty check valve (AWWA PNWS, 1995). Potential health effects due to copper poisoning include vomiting, nausea, and liver and kidney damage; refer to the Chemical Health Effects Table for other potential health effects (US EPA, 2002a). CDC reports that the observed acute health effects due to copper poisoning outbreaks are gastrointestinal illness (CDC, 1996).

Chromium is used as a corrosion inhibitor. In 1970, a cross-connection between a chromate-treated cooling system and the water supply at Skidmore College in New York, New York, caused five people to become nauseated (USC FCCCHR, 1993). In another incident in New Jersey in 1970, hexavalent chromium contamination occurred through a cross-connection of a building heating system and soft drink machine causing 11 people to become nauseated (USC FCCCHR, 1993). Potential chronic health effects are listed in the Chemical Health Effects Table (US EPA, 2002a).

Synthetic and volatile organic compounds

Synthetic and volatile organic compounds as a group are contaminants in 66 reported incidents, with the most frequent contaminants being ethylene glycol (used in antifreeze), propylene glycol (used in antifreeze and as a food additive), freon (refrigerant), and propane (fuel).

Ethylene and propylene glycol were contaminants in 16 and 5 reported incidents, respectively. Examples include one incident in 1982, when ethylene glycol backsiphoned from an air conditioning system's water holding tank into a group of dialysis machines contributing to the death of "several" patients in Illinois (AWWA PNWS, 1995). In 1985, backpressure from a hospital air conditioning system caused the introduction of ethylene glycol into the water system of a New York hospital. One woman died after being exposed while undergoing dialysis (CDC, 1987). In 1987, a cross-connection with a heating system contaminated the plumbing at a municipal building in North Dakota with ethylene glycol, causing acute illness in 29 people. Water from a spigot used to make flavored drinks contained 9 percent ethylene glycol. Reported health effects included excessive fatigue and dizziness, while two children experienced vomiting, excessive fatigue, and hematuria (CDC, 1987). Backflow of propylene glycol from a fire suppression system in 1993 into the potable water system of a park in Arizona occurred for at least 2 months before the point of entry was identified. Several employees reported nausea and intestinal upsets after drinking water during the period of contamination (Watts, 1998), which was discovered by taste and odor complaints.

Freon and propane were contaminants in four and three reported incidents, respectively. In 1989, backpressure from a propane tank car forced propane into the water supply of Fordyce, Arkansas. Three people in separate buildings were injured from explosions after flushing toilets, and two houses were destroyed and a business was damaged by explosions and subsequent fires (AWWA PNWS, 1995). Backpressure from an air conditioning unit caused freon to backflow into the distribution system in Franklin, NE. The contamination was detected when city residents complained of bad tasting water that caused a burning sensation in the mouth (AWWA PNWS, 1995).

Detergents were contaminants in nine reported incidents. Contamination of concentrated soap in 1995 from an incorrectly installed soap dispenser at a health care facility in Iowa affected 13 people was reported a burning sensation in their mouths and symptoms resembling the flu (CDC, 1998). In 1993 in Seattle, WA a temporary cross-connection at a car wash facility allowed soapy water in the distribution system, affecting an eight block area and causing two unconfirmed cases of illness (AWWA PNWS, 1992).

Nitrates and nitrites

Nitrates and nitrites were contaminants in four reported incidents. Nitrate is a common ion found in natural waters and is used in fertilizers. Nitrite is typically not observed at significant levels (AWWA, 2001), however nitrate reduces to nitrite in the human body. In one incident in the county courthouse building of Monterey, CA, sodium nitrate from the boiler and cooler system backflowed into the potable water supply through a faulty backflow prevention device. Nineteen people became sick and needed medical attention from drinking coffee from the courthouse snack bar (AWWA PNWS, 1995). An incident of nitrite contamination at a school in California caused illness in three people; a faulty double-check valve allowed chemicals from the chilling system to enter the school's potable water system (CDC, 1998). Another backflow incident through a cross-connection with a boiler and a faulty backflow prevention device occurred in New Jersey, causing six people to become ill with methemoglobinemia caused by nitrites (CDC, 1998). Potential health effects of nitrate consumption include diuresis and hemorrhaging of the spleen, among others (US EPA, 2002a).

5.2.2 Biological Contaminants

The risks posed by backflow of biological contaminants vary dramatically depending on the disease vector, the concentration and degree of infectivity of the pathogen, the level of disinfectant residual maintained by the water system, and the health of the individual exposed (Rusin et al., 1997). Infective dose studies of non-primary (opportunistic) pathogens on healthy individuals and animals, using the oral and intranasal route, demonstrate that very high doses (e.g., for bacteria, 10^6 - 10^{10} cells) are needed for infection or disease (Rusin et al., 1997).

Pathogenic microorganisms (e.g., *Giardia*, some strains of *E. coli*) have contaminated potable water supplies through cross-connections with sewer lines, untreated surface water sources, reclaimed water supplies, equipment at medical facilities and mortuaries, and utility sinks, pools, and similar receptacles. In addition, drain lines, laboratories, and illegal connections of private wells and cisterns to public water supplies are primary sources of contamination (USC FCCCHR, 1993).

A majority of microbial incident reports (32 of 58) list the microbial contaminant as "sewage" or nonspecific microbes. In the summer of 1990, 1,100 guests of a country club in Tennessee suffered intestinal disorders in two mass incidents after consuming the club's contaminated water supplied from an auxiliary well that had become contaminated with sewage due to a cross-connection (AWWA PNWS, 1995). In February, 1990, a cross-connection between an auxiliary irrigation system supporting a golf course and country club and the Seattle Water Department's distribution system resulted in total and fecal coliform contamination that was detected by neighboring systems purchasing water (AWWA PNWS, 1995). The health effects from pathogens are often not specifically reported in the incident reports, making it more difficult to determine the type of microbial contaminant. The combination of these reporting issues leads to underreporting of contamination linked to a specific pathogen.

The general health effects of most microbial pathogens include fever, nausea, and diarrhea, while some diseases have long-term and/or life-threatening effects. For example, the protozoan *Giardia* (a contaminant in 12 reported incidents) causes severe and potentially long-term diarrhea, accompanied by

excessive gas, bloating, and weight loss. The Microbial Health Effects Table lists these general health effects and other potential diseases (US EPA, 2002b); however, the table is not all inclusive; additional potential health effects exist.

From backflow incident records collected by EPA, the most common microbial contaminants and their potential health effects are listed below with examples of backflow incidents.

Shigella

Shigella species are a cause of gastroenteritis, and are reported as contaminants in five incidents. The associated symptoms are vomiting, diarrhea, fever, and convulsions (US EPA, 2002b). All species of *Shigella* are highly infectious in humans and are spread through ingestion of fecal contamination (US FDA, 2001a). In one incident in 1977, a cross-connection led to four cases of shigellosis in an apartment house in Chicago, Illinois (USC FCCCHR, 1993). It is unknown whether the cross-connection spread *Shigella* into the distribution system.

E. coli

E. coli, a common biological contaminant (reported as a contaminant in two incidents) that is found in sewage, is normally a benign intestinal bacterium that is present in every human. However, some strains of *E. coli* are pathogenic, and can cause a variety of internal disorders. The most common effect is watery diarrhea, with some strains causing fever or dysentery. In rarer cases, some strains of *E. coli* can cause persistent diarrhea in young children, and have hemolytic properties. An infamous strain of *E. coli* is strain O157:H7, which, in addition to causing bloody diarrhea, can cause kidney failure (US EPA, 2002b). In 2000, two outbreaks of *E. coli* occurred in Medina County, OH, where approximately 30 became ill (Cleveland Plain Dealer, 2001).

Salmonella

Salmonella is one of the primary intestinal bacterial waterborne pathogens (reported as a contaminant in one incident). Depending on the strain, health effects can include typhoid fever, gastroenteritis (salmonellosis) (Benenson, 1995), and septicemia (US EPA, 2002b). In one incident, 750 people became ill with *Salmonella enteritidis* in Richland, Washington, in 1983. The incident involved new plumbing and contaminated ice (CDC, 1984). A person infected with the *Salmonella enteritidis* bacterium usually has fever, abdominal cramps, and diarrhea beginning 12 to 72 hours after consuming a contaminated food or beverage. The diarrhea can be severe, and the person may be ill enough to require hospitalization (CDC DBMD, 2001).

Campylobacter jejuni

Campylobacter jejuni is an avian gut bacteria that is the primary cause of bacterial diarrhea in the United States (CDC, 2002b). It is estimated that *Campylobacter* infects over two million people a year, and 10,000 cases are reported to the CDC annually, despite limited monitoring. Although *Campylobacter* is primarily a foodborne pathogen, it has been implicated in waterborne disease outbreaks in the past (CDC, 1996). This bacteria can cause gastroenteritis with symptoms including bloody diarrhea, fever, and abdominal cramping (US EPA, 2002b). In extreme cases, a *Campylobacter* infection may lead to Guillain-Barré syndrome where the immune system attacks part of the nervous system (CDC, 2002b). In 1986, 250 people became ill with diarrhea due to *Campylobacter* contamination in Noble, OK (CDC, 1996).

Cyanobacteria

Cyanobacteria are photosynthetic free-living bacteria. They produce algal blooms in fresh water, which can result in elevated toxin levels. Cyanobacterial toxins can produce acute neurotoxicity,

hepatotoxicity, gastroenteritis, respiratory ailments, skin irritation, and allergic reactions through contact or ingestion (CDC, 2002c). In one incident in 1992, in Ritzville, Washington, backsiphonage from a drain sump near a new reservoir caused a reoccurring contamination of cyanobacteria (AWWA PNWS, 1995).

Norwalk and Norwalk-like viruses

The Norwalk family of viruses is a cause of viral gastroenteritis with symptoms of vomiting, diarrhea, upper respiratory problems, and fever (US EPA, 2002b). Although viral gastroenteritis is caused by a number of viruses, it is estimated that Norwalk or Norwalk-like viruses are responsible for about 1/3 of the cases of viral gastroenteritis not involving the 6-to-24-month age group (US FDA, 2001b). People often develop immunity to the Norwalk virus, however, it is not permanent and reinfection can occur (US FDA, 2001b). In developing countries the percentage of individuals who have developed immunity is very high at an early age. In the United States, the percentage increases gradually with age, reaching 50 percent in the part of the population over 18 years of age. Norwalk or Norwalk-like viruses were reported as a contaminant in two incidents. In one incident in 1980 in Lindale, Georgia, 1,500 people became ill with a Norwalk-like acute gastrointestinal illness as a result of a contamination incident for which the specific chemical or microbiological contaminant was never determined (CDC, 1982).

Giardia

Giardia was a contaminant in 12 reported incidents. *Giardia* are intestinal parasites that exist in natural waters in a nonreproductive stage (cysts). They can cause diarrhea, as well as vomiting, cramps, and bloating (US EPA, 2002b). The mode of infection is through ingestion of fecally contaminated food or water. The infections from these parasites are usually self-limiting, but among children, the elderly, and the immunocompromised, the infections can lead to chronic diarrhea, anemia, fever, and possibly death (Hoxie et al., 1997; US EPA, 1998; CDC, 2002a). In 1979, *Giardia* was responsible for 2,000 illnesses after backpressure effluent from a tree bubbler system in an Arizona State park (Lake Havasu) contaminated the potable water supply (USC FCCCHR, 1993). In 1994, dozens of people became ill from *Giardia* contamination through a cross-connection between a drain and an ice machine at a convention in Columbus, Ohio (AWWA PNWS, 1995).

Other contaminants

Biological contaminants that are nonmicrobial can also enter the distribution system. For example, due to a cross-connection at a funeral home, human blood and bodily fluids from the embalming process were backsiphoned into the distribution system, and blood flowed from water fountains and other water fixtures (US EPA, 1989). Human bodily fluids can be a vector for disease as well as being an aesthetic concern.

5.3 Data on Selected Backflow Incidents, 1970-1999

There are no reporting requirements nationally for backflow incidents, and no central repository for backflow incident information. Nonetheless, data on backflow incidents have been actively collected by several organizations, including the following:

- Centers for Disease Control (CDC), the federal agency that tracks epidemiology of illnesses as reported by doctors and health care providers.

- Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association (AWWA PNWS), a technical and educational association for the drinking water industry.
- University of Southern California's (USC's) Foundation for Cross-Connection Control and Hydraulic Research, a water engineering research and industry standards development organization.
- American Backflow Prevention Association (ABPA), a training and advocacy association for the water system industry.

Drawing from these and other sources, including EPA Regional Offices, the Florida Department of Environmental Protection, professional manuals on controlling cross-connections, and news reporting accounts, EPA compiled data on 459 backflow incidents that occurred in the United States between 1970 and 2001. Exhibit 5.1 summarizes the types of incidents reported at various sites and indicates the wide range of problems that can occur. Because backflow incidents are underreported, the data cannot support conclusions about the full magnitude of risk associated with backflow. And the exhibit summarizes only the reported acute health impacts, as surveillance programs do not capture impacts due to chronic exposures or chronic health effects.

Exhibit 5.1 Reported Backflow Incidents for Which EPA Has Compiled Data

Source of Contamination	Documented Incidents	Examples of Incidents
Residential Sites		
Homes With Individual Connections	55	<ul style="list-style-type: none"> • In 1991, an atmospheric vacuum breaker valve intended to protect a cross-connection between an irrigation system and the potable supply malfunctioned, allowing backflow of irrigation water into the public water system. The water system, located in Michigan, was contaminated with nematodes, rust, and debris (AWWA PNWS, 1995). • In 1997, recycled water reached approximately 1,600 California homes and businesses from a residential connection after a property owner illegally tapped into a reclaimed water line (California HHS Agency, 2001).
Apartment Buildings or Condominiums	27	<ul style="list-style-type: none"> • In 1981, chlordane and heptachlor were backsiphoned through a garden hose submerged in a termite exterminator's tank truck in Pennsylvania. An undisclosed number of illnesses occurred, and 75 apartment units were affected (NAPHCC, 1996). • In 1985, hexavalent chromium backflowed from a Boston, Massachusetts condominium's cooling tower into the potable water system (NAPHCC, 1996).
Mobile Homes or Mobile Home Parks	1	<ul style="list-style-type: none"> • In 1984, a leak developed in a wall separating solar water heater heat transfer medium from a residential water supply. The water supply of a mobile home in Oregon was contaminated with dichlorofluoromethane (AWWA PNWS, 1995).
Neighborhood	3	<ul style="list-style-type: none"> • In 1995, a business tapped into an irrigation line containing untreated water in Yakima, Washington, without installing a backflow prevention device. This allowed <i>Giardia</i> to contaminate area residences, resulting in 11 cases of giardiasis. (AWWA PNWS, 1995). • In 1997, a fire truck pump created backpressure on a fire hydrant before the valve was closed, forcing over 60 gallons of aqueous fire-fighting foam into an estimated 40,000 neighborhood taps in Charlotte-Mecklenburg, North Carolina (ABPA, 1999).

Exhibit 5.1 Reported Backflow Incidents for Which EPA Has Compiled Data

Source of Contamination	Documented Incidents	Examples of Incidents
Government and Institutional Sites		
Medical Sites (Hospital, Dental, Nursing Sites, Blood Banks, etc.)	27	<ul style="list-style-type: none"> • In 1982 in Illinois, ethylene glycol backsiphoned from an air conditioning system's water holding tank into a group of dialysis machines, contributing to the death of "several" (number not given) patients (AWW A PNW S, 1995). • During shut-down of a water main to repair a valve in 1984, the backflow of water from a nursing home's boiler caused burns to a water department employee's hands in Washington State (AWWA PNW S, 1995). • In 1994, during repairs to a nursing home air conditioning unit in Franklin, Nebraska, a hole left in the cooling coils allowed freon to backflow into the city water main, affecting the city's 1,100 residents. Customers complained about the taste of the water, but no illnesses were reported (AWWA PNW S, 1995).
Schools, Universities, and Children's Camps	31	<ul style="list-style-type: none"> • In 1990, six staff members of an Indiana middle school reported becoming ill after drinking water containing ethylene glycol that backflowed from the school's cooling system into the potable water system (AWWA PNW S, 1995). • In 1987, copper sediment contamination in a beverage mixing tank resulted in four cases of illness in a residence hall at Michigan university (AWW A PNW S, 1995). • In 1995, three people became ill at a California school after drinking water from a system with a double-check backflow prevention valve that did not meet industry standards and had badly deteriorated rubber gaskets (Craun and Calderon, 2001).
Public Water Systems	15	<ul style="list-style-type: none"> • In 1984, creosote was backsiphoned through a three-quarter inch hose used to prime a pump, contaminating a section of a Georgia community water system. No illnesses were reported (AWWA PNW S, 1995). • In 1970 in Mattoon, Illinois, hot wash water from an asphalt plant backpressured into mains during flow testing of fire hydrants (USC FCCCHR, 1993).

Exhibit 5.1 Reported Backflow Incidents for Which EPA Has Compiled Data

Source of Contamination	Documented Incidents	Examples of Incidents
Other Government/ Institutional Sites (e.g., public buildings, churches)	24	<ul style="list-style-type: none"> • In 1976, water fountains at the State Capitol building in Salem, Oregon, were contaminated with freon gas from a ruptured heat exchanger. The gas combined with the fluoride in the water supply, forming an acid compound that caused a bitter, burning taste (AWWA PNW S, 1995). • In 1991, two check valves froze open at a Texas Air Force base, resulting in a backflow from a water chiller; pathogenic bacteria were detected in the water. The specific contaminant was not identified. Approximately 22,000 workers and residents were without water during system flushing (AWWA PNW S, 1995). • In 1994, the water system at a Tennessee prison was cross-contaminated by the facility's wastewater pump station, resulting in 304 cases of giardiasis (Craun and Calderon, 2001). • Purified drinking water lines at the Oak Ridge Reservation's K-25 atomic bomb fuel plant were interconnected for an unknown length of time (possibly on the order of decades) with lines carrying impure creek water. The creek water contained poisons generated from nuclear fuel production, possibly including contaminants such as strontium-90 and arsenic (Nashville Tennessean, 2000).
Commercial Sites		
Restaurants	28	<ul style="list-style-type: none"> • In 1979, two high school students in Seattle, WA, became ill, showing symptoms of copper poisoning after drinking soft drinks from a dispensing machine in a restaurant. The backflow of carbon dioxide from the soft drink dispensing machine was considered the likely cause of the copper release (AWWA PNW S, 1995). • In 1987, a child in Minnesota suffered acute copper toxicity when backflow from a carbon dioxide machine contaminated a restaurant's potable system (AWWA PNW S, 1995).
Office Buildings	18	<ul style="list-style-type: none"> • In 1989, a backflow event at an Ohio government office building occurred after crews worked on the air conditioning system. Twelve individuals became ill after ingesting water that had been contaminated with Acid Blue 9, an algae-retarding chemical (AWWA PNW S, 1995). • In 1991, trichloroethane entered the distribution system of a city in Missouri from a newspaper office. Uncoordinated flushing by the water system caused the contaminant to spread throughout the system, with concentrations as high as 420 micrograms/L (AWWA PNW S, 1995).

Exhibit 5.1 Reported Backflow Incidents for Which EPA Has Compiled Data

Source of Contamination	Documented Incidents	Examples of Incidents
Other Commercial Sites	66	<ul style="list-style-type: none"> • In 1974, backsiphonage of a chromium compound from the chiller water of an air conditioning system contaminated the drinking water system in the auditorium hosting the 94th annual AWWA conference and exhibition in Massachusetts, involving thousands of people (AWWA PNWS, 1995). • In 1990, 1,100 guests of a Tennessee racquet and country club became ill with an intestinal disorder after consuming the club's contaminated water supplied from an unauthorized and unprotected auxiliary well in close proximity to a malfunctioning sewage pumping station (AWWA PNWS, 1995). • In 1994, a number of individuals attending an Ohio convention got sick with giardiasis, spread by an ice machine contaminated by a cross-connection to a sewage drain (AWWA PNWS, 1995).
Miscellaneous Sites		
Agricultural Sites	6	<ul style="list-style-type: none"> • In 1991, an antibiotic solution used at a commercial chicken house entered an Arkansas public water system as a result of a cross-connection between an auxiliary well connected to the chicken house plumbing (AWWA PNWS, 1995). • In 1995, pesticides (paraquat and atrazine) were backsiphoned into a distribution system when an accidental water main cut occurred while a Louisiana farmer was diluting herbicides in a tank. Some people reported nausea, stomach burns and pains, profuse sweating, diarrhea, and shortness of breath. The incident was the subject of a class-action lawsuit (AWWA PNWS, 1995).
Recreational Sites	10	<ul style="list-style-type: none"> • In 1986 in Springfield, MO, failure of a single check valve on a soft drink dispensing machine at a local fair resulted in the backflow of carbon dioxide that created levels of 2.7 mg/L of copper and 2.2 mg/L of zinc. Three people experienced vomiting and abdominal pain (AWWA PNWS, 1995). • In 2000, contaminated water lines at an Ohio fairground resulted in an outbreak of <i>E. coli</i>, resulting in 30 cases of illness (Cleveland Plain Dealer, 2001).

Exhibit 5.1 Reported Backflow Incidents for Which EPA Has Compiled Data

Source of Contamination	Documented Incidents	Examples of Incidents
Industrial Sites	40	<ul style="list-style-type: none"> In 1989, backpressure from a propane tank car forced propane into the water supply of Fordyce, Arkansas. Three people in separate buildings were injured from explosions after flushing toilets, and two houses were destroyed and a business was damaged by explosions and subsequent fires (AWWA PNWS, 1995). In 1990, at least two individuals became ill after an unknown quantity of industrial chemicals backflowed into the public water supply via an unprotected auxiliary line illegally tapped to a hose connected to the plant's flushing system. The incident occurred at a New Mexico facility that transforms wheat and barley into ethanol (AWWA PNWS, 1995).
Other Sites/Site Type Unknown	108	<ul style="list-style-type: none"> In 1980, a cross-connection aboard an Alaskan crab processing ship resulted in backflow of sewage (including <i>Giardia</i>), causing 189 employees to become ill and endangering about \$35 million worth of processed king crab (USC FCCCHR, 1993; CDC, 1982).
Total	459	

Source: CDC, AWWA PNWS, ABPA, EPA, USC FCCCHR, FDEP, and Newspapers

5.4 Occurrence of Cross-Connections and Backflow

From a 1999 American Backflow Prevention Association (ABPA) survey, ABPA estimated that 42 percent of cross-connection surveys conducted (by 135 respondents, representing 30 states) identified a cross-connection. The most common cross-connections reported were from irrigation (62 percent of respondents identified an irrigation cross-connection), fire systems (43 percent), garden/washdown hoses (43 percent), and boilers (38 percent). A total of 233 backflow incidents were reported by 51 percent of respondents, or 1.7 incidents per system (ABPA, 1999). These numbers only reflect those backflow incidents detected; many go undetected because it is not practical for systems to continuously monitor their distribution systems for changes in pressure or the presence of contaminants. In addition, ABPA conducted a survey in 2000, which included a question on the occurrence of low pressure events which may lead to backflow where unprotected. A survey of 70 systems responding to the survey reported 11,186 pressure reduction incidents in the previous year; 34.8% of the incidents were from routine flushing, 19.2% were due to main breaks, and 16.2% of the incidents were due to service line breaks (ABPA, 2000).

5.5 Difficulties in Detecting Backflow Incidents and Associated Outbreaks

Contamination due to backflow incidents may not be detected or reported for several reasons:

- Bacterial contamination tends to be transient and highly localized (ABPA, 1999).

- Water system operators monitor routinely for coliform bacteria, however, most often that is the only microbial monitoring conducted (US EPA, 2001). While these bacteria are important indicators of distribution system problems, some microbial contaminants may go undetected. The limited nature of biological monitoring, especially in smaller systems (as infrequent as once per year), makes it unlikely that contamination will be detected in a timely manner. Operators monitor for a limited number of chemicals (US EPA, 2001), but not routinely or often enough to identify most backflow incidents.
- Most backflow incidents are generally detected and reported to the local authority only if customers detect an irregularity in their water supply. Not all contamination that produces illness and disease can be detected by taste, color, or odor (Hoxie et al., 1997). For many highly toxic substances, including benzene, vinyl chloride, and dichloromethane, the taste and odor threshold is well above the drinking water maximum contaminant level (MCL) (DWI0441, 1992; Glaza and Park, 1992).
- Even if an irregularity is detected, it may not be reported by the consumer.
- When water system operators suspect backflow incidents, they have a disincentive to document and report them because of concerns about legal liability and loss of consumer confidence, as noted by an EPA Office of the Inspector General report (US EPA, 1995). (Fortunately, these same concerns provide the utility with an incentive to protect the distribution system.)
- The difference between epidemic and endemic transmission is obscured by limitations in recognizing when an outbreak occurs (Frost et al., 1996). A study of waterborne cryptosporidiosis estimates that out of every 10,000 infections by *Cryptosporidium* only 3 would be reported, and concludes that surveillance for detected cases of a reportable illness may substantially underestimate rates of infection and morbidity (Perz et al., 1998).
- Some contaminants that enter the distribution system through cross-connections and backflow may not be reportable.
- The incidents of reduced pressure and some cross-connections are often transient in nature. Pressure changes may not be detected by conventional pressure monitoring equipment. Reduced pressures may also affect only a portion of the distribution system, a specific pressure zone, or only piping beyond the service connection.

State officials offer perspective on the estimated extent of underreporting. One State official suspects that there may be 10 times as many as incidents as are reported (Fauver, 2002). Another State official estimates approximately 1,200 backflow incidents occur per year, assuming that all water main breaks will cause a backflow incident (and each of 600 public water systems in the State average 2 water main breaks a year). Yet only 15 backflow incidents have been documented in the State since 1970 (Koenig, 2002).

Outbreaks of illness associated with backflow incidents also are underreported, for the following reasons:

- Outbreaks of illness may not be linked to an incident of backflow contamination (Craun and Calderon, 2001). Documented effects of contamination are usually acute and result from short-term exposures; whether mild or severe, the effect appears soon after exposure. Effects that are long-lasting or only appear after some time (chronic effects) are difficult to ascribe to a single event or associate with a waterborne source. Cross-connections combined with uncorrected backflow situations that cause continuous or intermittent exposure over a long time and result in chronic illness would be less likely to be linked to backflow contamination.
- Contamination may not affect enough people to attract the attention of public health officials (Craun and Calderon, 2001).
- Information that could tie an incident to an outbreak of illness or disease, such as where and when a contaminant entered the system, is often missing.

Even when incidents are detected and voluntarily reported, inconsistent reporting and documentation procedures make it hard to assess the full scope of the problem. Some organizations that record incidents will accept reports only if they have documentation that meets their standards. The USC FCCCHR prepared a *Summary of Case Histories* (USC FCCCHR, 1993) that covers 397 incidents from 1903 to 1993. The Chief Engineer of the Foundation estimated that more than 90 percent of the backflow incidents known to water system administrators were not documented enough to be included in the case histories (CCC WS, 1999). Inadequate documentation can result from the fact that where backflow is suspected, in most instances it is difficult if not impossible to trace the origin of contamination (BMI, 1999).

6.0 Costs of Backflow Contamination Incidents

The costs associated with backflow incidents depend on the nature and scope of the incident and the nature and extent of the response. Depending on these factors, costs could be incurred for public notification; the repair of damage to water distribution system infrastructure; investigation, sampling, and laboratory analysis; clean-up of structures and equipment; purchases of bottled water; responding to consumer complaints; lawsuits (both legal fees and judgments); the repair of property damage; replacement of spoiled food; missed work and school; loss of production; and medical expenses. Beyond actual costs, other losses could include leisure time and even mortality.

The ABPA 1999 survey gathered information to estimate the costs water systems may incur to mitigate a backflow incident. The survey collected data from 25 water systems serving fewer than 10,000 people and from 103 systems serving 10,000 people or more. Survey results show that for the 92 systems that responded, water system operators expended an average of 494 hours per event mitigating backflow incidents. At \$30 per hour (the average rate of technical labor reported by the Bureau of Labor Statistics (2000)), that averages \$14,800 per event. Eleven of these were significantly more time consuming than the others, averaging 3,683 hours and about \$110,500 (at \$30 per hour) per incident. Excluding these 11 most time-consuming incidents, operators expended an average of 60.8 hours per incident and \$1,820 per incident. Utility-level costs such as these do not include costs for all of the possible elements described earlier, especially those for health-related effects.

Other backflow incidents reported monetary losses due to food spoilage, property damage, and lawsuits. Examples include a backflow of wastewater through a cross-connection created with the water supply and the wastewater line when a new well was installed; the wastewater contaminated pork valued at approximately \$2 million (NAPHCC, 1996). A lawsuit for \$21 million was filed against a pest control company that contaminated the water supply to 63 homes and businesses with pesticide; the money was compensation for physical distress, inconvenience (the homes and businesses were without water for several days), and loss of property value (AWWA PNWS, 1992).

7.0 Other Problems Associated with Backflow Incidents

This section discusses other negative effects associated with cross-connections and backflow that, although not a direct threat to health, can cause other undesired effects such as negative publicity, consumer complaints, damage to the water system, and impediments to system operation. Negative effects discussed are: 1.) corrosion; 2.) microbial growth; and 3.) taste, odor, and color problems.

Corrosion

Many contaminants, such as acids and carbon dioxide, can corrode pipes and other distribution system materials. Many incidents of corrosion induced by carbon dioxide backflow have released toxic amounts of copper into drinking water systems (AWWA PNWS, 1995). Many of these incidents were reported because the corrosion was rapid enough and large enough in extent to produce concentrations of corroded metal high enough to be toxic or to lead to complaints about taste and odor.

Corrosion in iron pipes is much less likely to be noticed because iron is not as toxic as copper, and corrosion of iron and steel is relatively slow, leading to lower concentrations. But slow corrosion is a problem: corroded iron pipes can lead to discolored water, stained laundry, and taste complaints (McNeil and Edwards, 2001). Corrosion can also weaken the integrity of pipes, causing leaks that can allow contaminants in through intrusion or catastrophic breaks, which can in turn cause reduced pressure (McNeil and Edwards, 2001). Corrosion of iron pipes can also form tubercles that can shelter microbes (including pathogens) from disinfection (US EPA, 1992).

Microbial growth

When backflow through cross-connections introduces microbes into the distribution system, these organisms can attach to pipe walls in places where the disinfectant residual may be inadequate to inactivate the microbes, such as in dead ends. Such organisms, even if they are not pathogenic themselves, can be a concern because they can colonize on the pipe walls, forming biofilms (US EPA, 1992) that trap and concentrate nutrients, promoting growth of pathogens (Costerton and Lappin-Scott, 1989). The biofilm can lead to total coliform violations, even in the absence of contamination events. Biofilm can also cause complaints about taste and odor and harbor potentially pathogenic organisms from disinfection (Characklis, 1988). Backflow through cross-connections can also introduce nutrients that support the growth of pre-existing biofilms.

Taste, odor, and color problems

Some contaminants introduced through cross-connections and backflow may not cause illness but may result in consumer complaints about the tastes, odors, or color of the water (e.g., seawater and dyes (AWWA PNWS, 1995)). Such incidents can lower consumer confidence in the water system, require water and employee time to flush the system to remove the offending contaminant, and initiate an investigation to identify and correct the cross-connection.

8.0 Suitable Measures for Preventing and Correcting Problems Caused by Cross-Connections and Backflow

This section reviews existing research, data, and available information regarding the prevention of cross-connections and backflow incidents, as well as mitigation measures systems use following a backflow incident.

8.1 Preventive Measures

Backflow into the public water distribution system can be prevented by eliminating cross-connections or protecting the potable water supply using backflow prevention devices and assemblies. Some systems educate the public to prevent cross-connections, and maintain and inspect the distribution system to correct those found. However, because situations frequently arise where new cross-connections occur before they are detected and corrected, it is helpful to build in to the distribution system physical impediments to backflow, including mechanical backflow prevention devices and assemblies. Systems look to minimize the risk posed to their distribution systems from a customer's plumbing system, and therefore conduct hazard assessments in order to determine the level of protection needed and what approach should be taken. The appropriate type of protection depends on the physical characteristics of the cross-connection (e.g., whether there is a potential for backpressure in addition to backsiphonage) and the degree of the potential hazard. The degree of hazard is a function of both the probability that backflow may occur and the toxicity or pathogenicity of the contaminant involved. A high hazard can be defined as,

“a condition, device, or practice which is conducive to the introduction of waterborne disease organisms, or harmful chemical, physical, or radioactive substances into a public water system, and which presents an unreasonable risk to health” (BMI, 1996).

Low hazard can be defined as,

“a hazard that could cause aesthetic problems or have a detrimental secondary effect on the quality of the public potable water supply” (BMI, 1996).

Another reason for conducting risk assessments is to determine and help manage legal liability due to public health risk; therefore, these definitions of high and low hazard are ultimately subjective and depend upon the risk aversion of the water system, appropriate local regulations, and the particular risk assessment conducted by the system.

8.1.1 Physical Separation

Air gaps, if designed and maintained properly, make backflow physically impossible as they ensure that there is no connection between the supply main and the nonpotable source. An effective air gap is a physical separation of a supply pipe from the overflow rim of a receiving receptacle, by at least twice the diameter (minimum of one inch) of the incoming supply pipe (USC FCCCHR, 1993; BMI, 1996). The distance between the end of a faucet and the overflow of a utility sink is an example of an air gap. While air gaps provide physical assurances against backflow, they are often tampered with as people extend the end of the pipe to prevent splashing and thus potentially create a cross-connection. By the AWWA standard, air gaps are acceptable in lieu of mechanical backflow prevention assemblies beyond the service connection only if installed and maintained by the local cross-connection control program enforcement agency (AWWA, 1999).

8.1.2 Backflow Prevention Devices and Assemblies

Mechanical backflow prevention devices and assemblies offer protection of the potable water system if other protective approaches fail. Backflow prevention devices and assemblies may be installed at the service connection to a facility (effectively “containing” a potential contaminant within a customer’s plumbing system and preventing it from entering the distribution system). Alternatively, devices and assemblies can also be installed at high and low hazard cross-connections inside the facility, including all outlets where cross-connections could potentially be created (this type of approach is called “isolation” or “fixture outlet protection”). Some drinking water authorities prefer isolation to containment because personnel working beyond the service connection are protected and, in most cases, the assembly can be sized smaller because of smaller piping beyond the service connection. However, backflow devices and assemblies used for isolation could be bypassed through changes to internal plumbing, inadvertently creating an unprotected cross-connection.

There are two types of mechanical protection available to systems: backflow prevention “devices” and backflow prevention “assemblies”. Backflow prevention devices function by stopping the reversal of flow, but are not testable once installed because they do not have inlet and outlet shut-off valves or test cocks (USC FCCCHR, 1993). Backflow prevention assemblies, by contrast, include an inlet and outlet shut-off valve and test cocks to facilitate testing of the assembly while it is in its functional environment (in-line) (USC FCCCHR, 1993).

Backflow prevention assemblies include pressure vacuum breakers (PVBs), spill resistant vacuum breakers (SVBs), double check valve assemblies (DCVAs), and reduced pressure principle backflow assemblies (RPs) (USC FCCCHR, 1993) (BMI, 1996). PVBs are vertically positioned assemblies that include spring-loaded check valves designed to close when flow stops (USC FCCCHR, 1993). They also have an air inlet valve that is designed to open when the internal pressure is lower than the atmospheric pressure, preventing backsiphonage but not backpressure. PVBs must be a minimum of 12 inches above all downstream piping and the flood level rim of a receptor to function properly. PVBs are designed to protect against low- or high-hazard situations.

SVBs are similar in design to PVBs with the addition of a diaphragm seal that stops water from spilling out the air inlet whenever the assembly is pressurized. As with PVBs, they protect against backsiphonage only (BMI, 1996).

A DCVA consists of two internally loaded, independently operating check valves together with tightly closing resilient seated shut-off valves upstream and downstream from the check valves (USC FCCCHR, 1993). These assemblies require a minimum of 1 foot of clearance at the bottom for maintenance purposes to allow for the worker to get to the assembly. These assemblies are used for protection against either backsiphonage or backpressure, but only for situations of low hazard.

RPs consist of two internally loaded, independently operating check valves and a mechanically independent, hydraulically dependent relief valve located between the check valves (USC FCCCHR, 1993). The relief valve maintains a zone of reduced pressure between the two check valves. The RP also has tightly closing, resilient seated shut-off valves upstream and downstream of the water supply. RPs must have a minimum of 1 foot clearance at the bottom of the assembly for maintenance purposes. RPs protect against backsiphonage or backpressure in low- or high-hazard situations.

One common backflow prevention device is an atmospheric vacuum breaker (AVB). AVBs rely on atmospheric instead of water pressure to work, and are installed downstream from all shut-off valves.

AVBs contain an air inlet valve that closes when the water flows in the normal direction. But, as water ceases to flow, the air inlet valve opens and prevents backsiphonage. AVBs must be a minimum of 6 inches above all downstream piping and the flood level rim of a receptor to function properly (USC FCCCHR, 1993). Household hose bib vacuum breakers and frost-proof wall hydrant faucets are examples of AVBs. According to some, AVBs do not protect against backpressure and are used in situations of low hazard (BMI, 1999); however, some plumbing codes recognize AVBs as high hazard assemblies.

The selection of any particular assembly or device is a function of the hazard assessment that balances the likelihood of backpressure and backsiphonage and the potential contaminants involved. The total cost of installing and maintaining a particular device or assembly can also be a factor for some water systems. In cases of low hazard and backsiphonage only, systems typically install less expensive AVBs or PVBs. If backpressure is a concern, many systems use double check valve assemblies, and if the degree of hazard is high, many systems install a reduced pressure principle backflow assembly.

The cost of backflow preventers has been reported by industry experts to be a deterrent in starting and maintaining a backflow prevention program (CCC WS, 1999). The cost of backflow preventers can range from \$18 to over \$22,000 (Watts, 2002), depending on the size and preventer type. Installation costs are typically borne by the water system and passed along to consumers, or are borne directly by consumers (ABPA, 2000).

8.1.3 Cross-Connection Control and Backflow Prevention Programs

Many states and local jurisdictions require cross-connection control and backflow prevention programs. However, many utilities do not have programs, or have programs that are insufficient to provide reasonable protection from cross-connections (ABPA, 1999). The program requirements vary widely between states: they may be part one or more of various regulations, including the drinking water regulations, health code, plumbing code, policy decision of the utility itself and building codes. A 1993 U.S. General Accounting Office report on the review of 200 sanitary surveys and a nationwide questionnaire of states identified inadequate cross-connection control programs as the most common deficiency (US GAO, 1993).

Programs and their level of effort are often tailored to the perceived risk of backflow and the types of hazards that can be introduced into the distribution system (USC FCCCHR, 1993). These factors may contribute to determining whether a containment or isolation program is implemented locally, as well as what types of backflow preventers are required. The need for backflow prevention in a water system is determined through a variety of means, including: surveys of new sites; retrofit programs; and change of occupancy inspections. Some programs inspect a site upon request. In many of these cases, identification of hazards determines the need for backflow prevention. For example, Kansas City, Missouri's program does informal, informational checks and passes the data to the plumbing authority (Nelson, 1999). The cross-connection control programs of Boston and Cambridge, Massachusetts, check connections to the last free-flowing tap (Hendrickson, 1999). Other programs, such as the one for Gatlinburg, Tennessee, identify additional requirements as a function of the risk of the facility (City of Gatlinburg, 2001). The water system in Price, Utah, performs about 20-30 inspections each year, about half of which go beyond containment to focus on potential cross-connection hazards. Staff focus primarily on high-hazard sites, but inspect other types of sites after installations or upgrades (Price, 1999).

In an effort to evaluate the measures states take to address cross-connections and backflow, EPA analyzed existing state requirements (Exhibit 8.1). The analysis reviewed regulations of all states pertaining to drinking water, clean water, and plumbing and building codes. Additionally, information from the following surveys was used as supplementary information for the analysis: the EPA Office of Inspector General Report (The Survey Report on the Cross-Connection Control Program, 1995); the Florida Report (The State of Florida's Evaluation of Cross-Connection Control Rules/Regulations in the 50 States, FDEP, 1996); Governmental Affairs Committee (GAC) Follow-up Survey (Summary of the Cross-Connection Control Requirements-Nationally, 1997); the American Backflow Prevention Association (ABPA) Survey, 1999; the Association of State Drinking Water Administrators (ASDWA) Survey, 1999; and the Van Loon Survey, 1999.

Exhibit 8.1. State Cross-Connection Control Requirements

Requirement	Number of States With Requirement
Does the State have a requirement for the control of cross-connections and/or backflow prevention?	50
Is it specified in the requirement that the system must implement or develop a cross-connection control and/or backflow prevention program?	32
Does the State require authority to implement a local ordinance or rule for cross-connection control and/or backflow prevention?	33
- Must the authority cover testing of backflow prevention assemblies?	27
- Must the authority cover the use of only licensed or certified backflow assembly testers?	16
- Must the authority cover the entry of the premises for the sake of inspecting the premises?	14
- Must the authority cover the entry of the premises for the sake of inspecting and/or installing backflow prevention assemblies?	15
Does the State require training, licensing, or certification of backflow prevention assembly testers?	26
Does the State require training, licensing, or certification of backflow prevention assembly and/or device installers?	6
Does the State require training, licensing, or certification of backflow prevention assembly and/or device repairers?	10
Does the State require training, licensing, or certification of cross-connection control inspectors?	19
Does the State require inspection of backflow prevention devices and/or testing of backflow prevention assemblies?	37
Does the State require the system to include record keeping as part of cross-connection control?	34
Does the requirement include keeping records of hazard assessment surveys?	11
Does the State require the system to notify the public following the occurrence of a backflow event?	3
Does the state require the local rule or ordinance to allow the system to take enforcement action against customers that do not comply with the cross-connection control and backflow prevention requirements?	23
Does the State conduct periodic reviews of cross-connection control programs?	3
Does the State regulation or plumbing code require public education regarding cross-connection control and/or backflow prevention?	7

Source: Derived from state drinking water and clean water regulations and state plumbing and building codes.

Considerable variability exists in state statutes, regulations, and policies related to cross-connection control and backflow prevention. In some cases where states do not require programs, some water systems within the state have implemented comprehensive and active programs in absence of a state requirement to do so.

According to input from a Cross-Connection Control Expert Meeting in September, 1999, a program is considered active and comprehensive if it contained regulations with these requirements: 1) require adoption of some form of legal authority (ordinance, by-law, code) for establishing and maintaining a cross-connection control program at the local level; 2) require training and certification specifications; 3) require record keeping and reporting; 4) provides public education; and 5) define enforcement responsibility and penalties. Many state programs that require cross-connection control and backflow prevention programs share these elements (ASDWA, 1999; USC FCCCHR, 1993). As noted in Exhibit 8.1, several states have these requirements, although a majority do not have all five of the recommended minimum elements.

Authority

Experts agreed that a cross-connection control program should have the authority to effectively enforce its ordinances and requirements (CCC WS, 1999). It is recommended by groups such as the AWWA (AWWA, 1999) that local cross-connection control programs have the legal authority in place to carry out basic program requirements, such as: 1) enter premises and inspect facilities to determine the degree of hazard and the presence of cross-connections; 2) to install, repair, and test backflow devices; 3) license employees or contractors engaged in testing of assemblies to ensure competency; and 4) terminate water service in case of noncompliance. Not all states require authority to effectively enforce the ordinances and requirements—33 states require local authorities to implement cross-connection control ordinances. Of those states, only 14 states require authority to enter premises for inspection purposes, and 15 states require authority to enter premises to inspect or install backflow prevention devices (Exhibit 8.1).

Different local authorities may have pre-existing responsibilities that would be overlapped by a cross-connection control program. Water utilities typically have the responsibility to protect the distribution system up to a customer's meter. In some cases, they fulfill this responsibility by placing backflow assemblies at the meter (USC FCCCHR, 1993). Plumbing authorities are often responsible for all potable water connections downstream of the meter (USC FCCCHR, 1993). Engineers and building authorities have inspection and compliance responsibilities which, in some cases, overlap with plumbing authorities. Additional overlap of authority occurs with regard to fire lines. While fire lines can use potable water and are frequently interconnected with the potable system (AWWA, 1999), they are usually unmetered and typically not considered part of the drinking water supply, and therefore are not subject to plumbing codes. Having backflow assemblies on fire lines (e.g., the Boston, Massachusetts, program involving the fire authorities) requires the cooperation of fire departments. In addition, many programs require customers to understand the dangers of backflow and take effective measures to eliminate, fix, and isolate cross-connections.

Training and certification

Training and certification is considered an important element of a cross-connection control and backflow prevention program (CCC WS, 1999). The training and certification can cover administering a program, conducting site surveys, installing and testing approved backflow assemblies, as well as for maintaining and repairing backflow assemblies. The testing of backflow prevention assemblies by a certified tester works to ensure that the assembly is functioning properly and will prevent backflow.

Twenty-six states require certification of backflow assembly testers (Exhibit 8.1). In some states, backflow assembly testers also install and repair the backflow preventers, however only 6 states require training, licensing, or certification of backflow installers (Exhibit 8.1). A small number of states expand their training requirements to program managers, installers, and/or repairers. Nineteen states require certification of survey inspectors (Exhibit 8.1).

Having trained and certified testers may contribute to effective cross-connection control and backflow prevention. For example, in 1998, a 42-inch water main broke in close proximity to the Boston Public Library, causing a dramatic drop in pressure in a large portion of the city for a short period; however, there were no reported backflow incidents (Hendrickson, 1999). The key elements of the Boston, Massachusetts, cross-connection control and backflow prevention program include 11 full-time cross-connection control staff employees, all of whom are certified testers licensed by the State of Massachusetts (Hendrickson, 1999).

Public education

There have been incidents of water system customers installing inadvertent cross-connections leading to backflow incidents. Education of the public may reduce the number of cross-connections created on the customer side, and is therefore a critical element in the implementation and success of a cross-connection control and backflow prevention program (CCC WS, 1999). Seven states required public education regarding cross-connection and/or backflow control and prevention (Exhibit 8.1). Public education is usually a function of the local water purveyor. Also, states sometimes provide materials for distribution, and maintain Internet sites that include information about state water quality programs to educate consumers about CCC programs and the role they play in protecting their drinking water. The Michigan Backflow Prevention Association has developed a video used for training utility personnel on educating the public (MBPA, 1997).

Educational tools used by local programs are: meetings, brochures, and seminars. Las Vegas, Nevada, has run multiple seminars to explain the program since they serve two jurisdictions (Blish, 1999). They have been so successful that some of the large casinos now have their own on-site trained and certified cross-connection control personnel. Tucson, Arizona distributes backflow prevention brochures to customers, and in the past has used public access television to promote the program. They also distribute backflow prevention brochures to existing customers during inspections (Adams, 1999). Other programs distribute fliers and bill inserts. The public awareness program of Sandy City, Utah, consists of fact sheets, manufacturer's information on backflow prevention, newspaper articles and newsletters, public meetings with customers, and backflow information provided to people requesting information on sprinkler systems (Oakeson, 1999).

Reporting and record keeping

A requirement to report backflow incidents is important for detection and correction of cross-connections (CCC WS, 1999). Although many backflow incidents are believed to occur undetected, those that are detected can provide valuable information on other potential cross-connections in the distribution system. Three states require reporting of backflow incidents to the public, while eight states require systems to notify state authorities (Exhibit 8.1).

Lack of records or poorly organized records can inhibit corrective measures. Thirty-four states require some sort of record keeping as part of their cross-connection control and backflow prevention program (Exhibit 8.1). As part of its cross-connection control program, Tucson, Arizona, has a data management system that tracks each assembly's compliance status (Adams, 1999). The Charlotte-

Mecklenburg incident involving firefighting foam, which took 39 hours and 100 city employees to remedy, prompted the state to require a comprehensive evaluation of the Charlotte-Mecklenburg Utility Department's backflow prevention program by an outside consultant. One of the key findings resulting from the evaluation was that the program did not have a formal retrofit program for existing connections and devoted excessive resources to record keeping; the resources spent on record keeping were used inefficiently. Since then, the utility has implemented a new data management system to reduce the record keeping burden and plans to hire an additional staff member to focus on developing a program for retrofitted equipment (ABPA, 1999).

Testing and repair

Many systems that have cross-connection control and backflow prevention programs require testing to ensure that backflow preventers are working correctly. As in any mechanical device, backflow assemblies can deteriorate and fail as they get older. Testing intervals typically are annual, semi-annual, or risk-based (USC FCCCHR, 1993).

Many states require in regulation or code specific components that make up a testing program. A testing program frequently identifies the appropriate standards that a backflow prevention device or assembly must meet (e.g., standards set by the USC FCCCHR, AWWA, or in the Uniform Plumbing Code (UPC)), as well as specifies a routine testing frequency to ensure adequate performance of the devices. In many cases, assemblies are then tested by a certified backflow assembly tester. Approximately 37 states require inspection and/or testing of various backflow assemblies in their regulations (Exhibit 8.1).

In Boston, Massachusetts, as required by the state, reduced pressure backflow assemblies are tested twice a year; double-check valve assemblies are tested once per year (Hendrickson, 1999). The program performs 11,000 site inspections per year. All surveys go to the last free-flowing outlet regardless of whether the facility is considered high- or low-hazard, as required by state cross-connection control regulations. Under this program, 100 percent of all high-hazard sites have installed protection. This high level of testing has prevented any cross-connection incident since 1984, and no boil-water notices have been necessary (Hendrickson, 1999).

Enforcement

AWWA recommends that cross-connection control program authority should include clearly defined enforcement procedures such as provisions to shut off water service if devices are not installed or tested, entry to property is not allowed, devices and assemblies are not installed properly, devices are not tested, and testing payments are not received (AWWA, 1999). According to the 1995 EPA Office of Inspector General report, state officials indicated that they adopted a regulation prohibiting cross-connections and required the local water suppliers to establish a program with the responsibility to administer and enforce the program at the local level (US EPA, 1995). State officials indicated, however, that there is little follow-up or enforcement at the state level (US EPA, 1995). In addition, several states do not require systems to develop programs to implement or enforce the requirements, through additional drinking water regulations, plumbing codes, or health codes. For example, only 23 states require enforcement action against noncomplying customers (Exhibit 8.1). In Denver, Colorado, enforcement consists of notifying customers that backflow assemblies must be installed. Customers are then given 90 days to comply, followed by a second notice, 30 days of grace, and then third notice. Failure to comply may lead to suspension of water service. Inspections are done by request and number approximately 25 per month (Stevens, 1999). Thirty-two states require water systems to have a CCC

program, but only three states conduct periodic reviews of cross-connection control programs, and these reviews are conducted annually (Exhibit 8.1).

8.1.4 Disinfectant Residual

While not able to prevent cross-connections or backflow from occurring, the use of disinfectant residuals (i.e., free chlorine or chloramines) can provide a measure of protection against waterborne disease through the inactivation of some microbial or oxidation of some chemical contaminants. Although contamination from cross-connections and backflow may be controlled by a disinfectant residual (Snead et al., 1980), some water supply professionals believe a disinfectant residual is not effective when cross-connections result in massive contamination (LeChevallier, 1999). In some cases, reductions in a disinfectant residual can signify the existence of a contamination problem in the distribution system, including those resulting from cross-connections and backflow (Haas, 1999). However, some disinfectant residual sampling strategies (e.g., grab samples), may not be able to detect a reduction in disinfectant residual concentrations for transient events, such as many backflow incidents.

8.1.5 Pressure Stabilization and Maintenance of Positive Pressure

Since backsiphonage and possibly backpressure are induced by drops in distribution system pressure, maintaining positive and stable pressure reduces the risk of backflow. Minimizing pressure spikes through use of variable speed pumps and proper valve opening and closing procedures may reduce the frequency of main breaks that cause backsiphonage (Kirmeyer et al, 2001), and thus be a preventive measure. Maintaining positive pressure through changes in pumping patterns and adding additional pump power can minimize backsiphonage and may reduce the occurrence of backpressure events (Kirmeyer et al, 2001). Pressure stabilization and pressure maintenance may be difficult for systems with multiple entry points and those with large variances in elevation or daily demand. Main breaks, firefighting demands, or other unusual demands that cannot be predicted will also hinder a system's ability to maintain pressure.

The initial design of a distribution system can minimize possible cross-connection and backflow opportunities by avoiding low pressure areas and ensuring positive pressure throughout the system. Water systems that are aware of pressure drops within their distribution systems can conduct additional water quality testing to determine if a backflow incident has occurred, thus detecting incidents that may have gone undetected. Systems that have records of pressure over a period of time have the ability to identify chronic trouble spots, and the records can provide information to devise a strategy to fix them (LeChevallier et al, 2001). Studying and correcting low pressure zones in existing systems, either continual or transient, can reduce the number of backflow incidents (LeChevallier et al., 2001).

8.1.6 Pipeline Maintenance and Inspection

Regular inspection of pipelines may identify conditions that could lead to main breaks such as frozen valves, advanced corrosion, and small leaks, and allow them to be repaired before they lead to main breaks, which can lead to backsiphonage. Regularly cleaning and flushing pipelines may also reduce buildup and growth of biofilms that may promote corrosive conditions that can cause pipeline leaks and eventually breaks (Shindala and Chisolm, 1970; Norris and Ryker, 1987).

8.1.7 Sanitary Surveys

Through the course of conducting sanitary surveys on elements related to the distribution system, likely cross-connections may be identified and corrected by the water system (US EPA, 1999). Sanitary surveys may also find evidence of corroding pipelines, frozen valves, and other situations that could lead to pressure maintenance problems.

8.1.8 Standards and Codes

The plumbing codes adopted by states are represented in Exhibit 8.2. In addition to the plumbing codes listed in the exhibit, AWWA also provides guidelines and standards (AWWA, 1999). Some areas of the country use plumbing codes to set standards, as well as cross-connection control and backflow prevention programs. The plumbing standards used by many localities can be found in the Uniform Plumbing Code, the International Plumbing Code, the Building Officials and Code Administration, and the Southern Building Code Congress International. However, plumbing codes are often only enforceable against plumbers and property owners, and not public water systems themselves.

Exhibit 8.2 Plumbing Codes Adopted by States

Plumbing Code	Number of States Adopting
Statewide Code	47
No Statewide Code	3
Statewide Codes Adopted	
Uniform Plumbing Code	14
State Code	7
International Plumbing Code	5
National Standard Plumbing Code	4
Southern Building Code Congress International	4
Other	13

Source: NAPHCC Survey (1999), IAPMO Plumbing Code Adoption Map (2001)

8.2 Corrective Measures

This section describes methods used by water systems to correct contamination from cross-connection and backflow incidents once they have been detected, as well as minimize resulting problems. Corrective actions that systems conduct following detection of an incident include: 1) isolation of the contaminated area; 2) public notification; 3) flushing and cleaning the system; and 4) pipeline replacement.

8.2.1 Isolation of the Contaminated Area

If preventive measures fail and a backflow contamination event occurs, systems frequently respond by trying to limit the damage and remove the contaminant from the system. When a system learns of a contamination event, many systems isolate the portion of the system that was contaminated to prevent the contamination from spreading. The response to a 1982 propane gas leak in a town in Connecticut was to first evacuate residents and seal off the affected area (AWWA PNWS, 1995). This is achieved by shutting off valves surrounding the contaminated area. Crews generally start at the point

where the contamination was reported and work their way out until they find the edge of the contamination. Contaminants that are not detectable through sight or smell may be difficult to track and contain if field testing techniques for the contaminant are not available. Because a stuck valve can prevent an area from being isolated and lead to the spread of contamination, valve exercising programs can be important in isolating contamination events. In 1988, in response to a backflow incident at a paint factory in Edgewater, Florida, the factory manager isolated the factory water system from the city water system prior to flushing out the contaminants (USC FCCCHR, 1993). An example of not being able to isolate the area is the Charlotte-Mecklenburg incident (Exhibit 5.1), which required 90 million gallons to flush the distribution system (ABPA, 1999).

8.2.2 Public Notification

If a contamination event has occurred and the contamination was unable to be isolated before reaching customers, all customers served by the system must be notified (65 FR 25982). The type of notification depends on the contaminant and the size of the area contaminated (65 FR 25982). If the contaminant has acute health effects notification must be as quick as possible, either through broadcast media or through system employees or public safety officials going door-to-door depending on the size of the area. For contaminants without immediate or short-term health effects, the public can be notified by other methods such as letters placed in mail boxes or print media (65 FR 25982). Notification of the public can prevent health effects by minimizing possible contact with contaminated water until other immediate corrective measures have been completed. During the Charlotte-Mecklenburg incident (Exhibit 5.1), the city coordinated an emergency response and notified 40,000 affected customers. In a 25-block radius from the incident, door-to-door notifications were made instructing customers not to use their water. An extended area beyond the door-to-door radius was notified through media reports not to use their water (ABPA, 1999).

8.2.3 System Flushing and Cleaning

Once a contamination event has been detected and isolated, usually water system authorities flush the system as a first attempt to remove the contaminant. Flushing is done by opening up hydrants and expelling water from the system using a wide open valve approach until the contaminant can no longer be detected. If a large area has been affected several hydrants may need to be opened in succession to clean the system. Flushing generally moves from the source of contamination in the downstream direction. If the source of contamination is not found and fixed there is a possibility of a repeat incident. In 1986, after sodium hydroxide contaminated the distribution system of Lacey's Chapel, Alabama, water mains and affected plumbing were flushed after containment (Watts, 1998). Valves are then slowly opened before the hydrant is turned off. This allows for the removal of any contamination that was undetected during system isolation and may have moved beyond the valves used for isolation (Yoke and Gittelman, 1986). Out of 28 backflow incidents on which EPA has information and where a response was reported, 12 reported flushing the affected portion of the distribution system.

Some contaminants may not be adequately removed by flushing. Microbial contaminants may concentrate in biofilms that may not be easily dislodged by flushing alone. The water system serving Muncie, Indiana, drained its entire distribution system over a weekend in an unsuccessful effort to remove the biofilm (Geldreich, 1996). Other contaminants may adsorb to biofilm layers or corroded pipe materials and be released slowly to water in the pipe and, therefore, may take an unreasonable amount of time to flush from the system (US EPA, 1992). In these cases, water systems may opt to physically clean the pipelines. Pigging and rodding are cleaning methods where a device is introduced into the pipe that physically scrapes biofilm and corrosion layers from the sides of the pipe (Kirmeyer et

al, 2001). Jetting and sandblasting can also be used to remove such layers. Typically pipes are disinfected and flushed after a physical cleaning by one of the above methods.

8.2.4 Pipeline Replacement

Some contaminants may not be removed by physical cleaning. Examples include the pesticide chlordane, which can adsorb to even clean pipe material and is released into solution only at slow rates. In 1987, following contamination of drinking water lines in Fairlawn and Hawthorn, New Jersey, with the pesticides chlordane and heptachlor, the affected lines were removed and replaced (AWWA PNWS, 1995). Radioactive materials are also difficult to remove physically as they can irradiate pipe materials. Other contaminants such as highly corrosive or explosive contaminants may cause damage to the system. In these cases, systems may choose to replace the contaminated piping and other appurtenances.

9.0 Possible Indicators of a Backflow Incident

This section discusses events, occurrences, or signals that help indicate to a water system or regulatory authority that a backflow incident is occurring or has occurred. A problem for water systems in detecting cross-connections is that there is little immediate warning that a backflow incident is occurring. In some cases it is not known for some time after an incident, and in other cases it is never discovered. With an active monitoring program, cross-connections may be detected by routine inspection, and deficiencies in the distribution system that could lead to backflow could be corrected. However, the efficacy of a cross-connection control program might only be known to the extent that new backflow incidents are not detected. Possible indicators of backflow include: 1) customer complaints of water quality; 2) drops in operating pressure; 3) drops in disinfectant residual; 4) water meters running in reverse; and 5) coliform detections. It is also possible that cross-connections and contamination due to backflow events can occur in the absence of these indicators.

Customer complaints

From the backflow incident data collected (Exhibit 5.1), the primary indicator of backflow has been customer complaints of odor, discoloration of the water, or direct physical harm from contact with the water. Generally, it is unknown how long a backflow incident may have occurred before it is detected through aesthetic or health concerns.

Drops in operating pressure

Continual monitoring for reduced pressure can give immediate warning of a potential backflow incident. It may also identify the area where a pressure drop may have originated, and thus help isolate areas affected by backflow. A drop in operating pressure can only indicate that a backflow event may have already occurred; it cannot stop an event in progress or prevent an incident, unless the root cause is corrected.

Drops in Disinfectant Residual

A drop in the disinfectant residual of a distribution system can be an indicator of a backflow event. Many factors influence the concentration of the disinfectant residual in the distribution system, including the assimilable organic carbon level, the type and concentration of disinfectant, water temperature, and system hydraulics (Trussell, 1999). Entry of foreign material into the distribution system from backflow (or other events) may alter these factors and contribute to a loss of residual.

Water meters running in reverse

During periods of reversed water flow, water meters can reverse their counters. When investigating a water quality complaint at a restaurant in Kennewick, WA, a cross-connection specialist found the meter at the site running backwards; the dual check valves for the carbon dioxide tanks were impaired, allowing the pressurized carbon dioxide to backflow into the water supply line (AWWA PNWS, 1995). Based on a survey of water systems, many have the ability to detect meters running backwards and have detected this occurrence on several occasions (Schwartz, 2002).

Total coliform detections and heterotrophic plate count changes

A sudden spike in total coliform detections, or a sudden change in heterotrophic bacterial densities (measured by heterotrophic plate count) is an indication that contaminants could have entered the distribution system (40 CFR 141). Persistent coliform contamination may indicate a long-standing cross-connection. Monitoring for coliform and other microbial indicators of contamination, as well as more extensive monitoring, may help identify instances of backflow contamination.

10.0 Research Opportunities

This document identifies what we know regarding the potential health risks associated with cross-connections and backflow incidents in drinking water distribution systems based on available literature, research, and information. However, as with most areas, further opportunities exist for research to result in greater certainty of the health impacts associated with drinking water distribution systems. Some specific research opportunities, among others, related to cross-connections and backflow are: further analysis of how surges contribute to occurrence of backflow; the degree of underreporting of backflow incidents across the country; what constitutes an effective cross-connection control and backflow prevention program; and what the effectiveness of disinfectant residual is for protecting against microbial contamination from backflow. It is not feasible to list all specific data needs for cross-connection control and backflow prevention, but two reports being prepared for EPA as part of its Comprehensive Drinking Water Research Strategy and the Microbial/Disinfection Byproducts (M/DBP) Research Council outline additional research opportunities.

11.0 Summary

Cross-connections and backflow represent a significant public health risk (US EPA, 2000b) by allowing chemical and biological contaminants into the potable water supply (a conclusion of the Microbial/Disinfection Byproducts Federal Advisory Committee (M/DBP FACA)). Of the 459 backflow incidents from 1970-2001 on which EPA has information, an estimated 12,093 cases of illness resulted. Fifty-seven of these cross-connection-related waterborne disease outbreaks were reported to CDC from 1981-1998, and resulted in at least 9,734 cases of illness. A wide number and range of chemical and biological contaminants have been reported to enter the distribution system through cross-connections and backflow. Pesticides, sewage, antifreeze, coolants, and detergents were the most frequent types of contaminants reported. Although a wide range of contaminants have been reported, the number on contamination incidents is considered a likely underestimate due to problems in detecting, reporting, and documenting incidents. These problems include: an inability to detect incidents without health effects; incidents with health effects that are unreported because affected individuals do not realize a connection between their illness and the drinking water; no requirement on either health officials or water system

officials to report detected backflow incidents; and no central repository for reported illness. Where undetected, cross-connections may also expose consumers to contaminants from backflow long-term. Cross-connections can be prevented through mechanical means and through programs administered by local or state officials to specifically locate and eliminate cross-connections and prevent backflow. Officials can also take measures to correct deficiencies that either have the potential to lead to backflow incidents or have already caused a backflow incident, and they can increase monitoring for indicators of potential problems to improve reaction time to future incidents.

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F. Stormwater

- 1. Notice of Intent – Form 200 – State Water Resources Control Board**

APPLICATION Q & A

1. Do I need a permit to discharge waste?

If the operation or discharges from your property or business affects California's surface, coastal, or groundwater, you may need to obtain a permit to discharge waste from the appropriate Regional Water Quality Control Board (Regional WQCB).

If you are discharging pollutants (or proposing to) into surface waters, you must file completed federal National Pollutant Discharge Elimination System (NPDES) permit application forms with the appropriate Regional Board. Form 200 is to accompany the federal forms.

For other types of discharges, such as those affecting groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land) you must file a Report of Waste Discharge with the appropriate Regional Board in order to obtain Waste Discharge Requirements (WDRs). Form 200 is the basic form to be used.

For specific situations, the Regional WQCB may waive the requirement to obtain a WDR for discharges to land or may determine that a proposed discharge can be permitted more effectively through enrollment in a general NPDES permit or general WDR.

Typical activities that affect water include, but are not limited to, the following:

- Discharge of process wastewater not discharging to a sewer (factories, cooling water, etc.)
- Confined Animal facilities (dairies, feedlots, etc.)
- Waste containments (landfills, waste ponds, etc.)
- Construction sites
- Boatyards and shipyards
- Discharges of pumped groundwater and cleanups (underground tank cleanups, dewatering, spills)
- Material handling areas draining to storm drains
- Sewage treatment facilities
- Filling of wetlands
- Dredging, filling, and disposal of dredge wastes
- Commercial activities not discharging to a sewer (e.g. factory waste water, storm drain)
- Waste discharges to land

If there is a discharge of stormwater from your facility, you should visit our Stormwater page to find out if you need a Stormwater Permit in addition to any other permit. {put link in here }

2. Who must apply?

The owner or operator (depending on who controls day-to-day operations) of the facility must sign and submit the form.

3. What forms do I need?

WDRs

For discharge of waste to land, use **FORM 200**

NPDES

For discharges to surface waters, you will need Form 200 and one or more of the following federal NPDES permit application forms:

- For General Information to be completed in conjunction with Forms 2B, 2C, 2D, 2E, 2F, Short Form A and Standard Form A, use **FORM 200**
- For Publicly-Owned Treatment Works serving 10,000 persons or less, use **SHORT FORM A**
- For Publicly-Owned Treatment Works serving over 10,000 persons or treating significant industrial waste, use **STANDARD FORM A**
- For Publicly-Owned Treatment Works, use **FORM 2A**
- For Concentrated animal feeding operations and aquatic animal production facilities. New applications or renewals, use **FORM 2B**
- For existing manufacturing, commercial, mining, and silvicultural operations (including federal facilities), use **FORM 2C**

- For New manufacturing, mining, commercial and silvicultural operations, use **FORM 2D**
- For New applications or renewals for nonmanufacturing facilities, trailer parks, service stations, laundromats, commercial facilities, etc., use **FORM 2E**
- For Stormwater discharges associated with industrial activity, use **FORM 2F**, or see our Stormwater Page {Put link in here}

These application forms may be obtained at a Regional Board office or can be ordered from the National Center for Environmental Publications and Information at (513) 891-6561. Or, you may download the forms by clicking on the links provided.

4. **What is the application fee?**

Except for dairies, there is no application fee. You will be required to submit a payment which will serve as your first annual fee to complete your application. Except for dairies, all permitted dischargers must pay our annual fee. You will be billed for your annual fee. Failure to pay you annual fee may subject you to civil penalties, including fines. The Regional WQCB will notify you of your annual fee.

6. **How do I get Started?**

The process begins when you request an application from the appropriate Regional WQCB, or download it from this site. You must then file an application with the Regional Board. You will be asked to describe the wastes involved, the setting for the discharge, and the method of treatment or containment.

Once the application is completed and filed, the Regional WQCB staff will draft a permit. Issuance of the permit is by Regional Board order after a public hearing.

7. **How do I get an NPDES permit or WDRs?**

NPDES

The steps to obtain an NPDES permit are as follows:

1. File Form 200 and the appropriate federal NPDES application forms with the Regional Board. Anyone proposing to discharge must file a complete application at least 180 days before beginning the activity.
2. Regional Board staff reviews the application for completeness and may request additional information
3. Once the application is determined to be complete, Regional Board staff forwards it to the US Environmental Protection Agency (USEPA) within 15 days. USEPA has 30 days to review the application for completeness and to request additional information from the discharger. After the request for additional information is met, USEPA has 30 days to forward comments to the Regional Board.
4. Regional Board staff determines if they should issue the NPDES permit or prohibit the discharge. If a permit should be issued, Regional Board staff prepares a proposed permit and forwards a copy to USEPA for review.
5. USEPA review the application and has 30 days to object or submit comments to the Regional Board. USEPA may request an additional 60 days to review the proposed permit.
6. Following USEPA's review, Regional Board staff prepares a "Notice of Public Hearing" and mails it to the discharger with instructions for circulation. Regional Board staff also mails the public notice and proposed permit to persons and public agencies with known interest in the project. Regional Board staff may modify the proposed permit prior to the public hearing based on comments received from the discharger and interested parties.
7. The discharger must publish the notice for one day and submit proof of having complied with the instructions to the Regional Board within 15 days after the posting or publication.
8. The Regional Board holds a public hearing with at least 30 day public notification. The Regional Board may adopt the proposed permit or modify it and adopt it at the public hearing by majority vote. USEPA has 10 days to object to the adopted permit, and the objection must be satisfied before the permit becomes effective.

The entire Regional Board review and permit issuance process takes approximately six months, but may take longer depending upon the nature of the discharge and public concerns.

WDRs

The steps to obtain Waste Discharge Requirements are as follows:

1. File the Report of Waste Discharge form (FORM 200) with the necessary supplemental information with the Regional Board at least 120 days before beginning to discharge waste.
2. Regional Board staff reviews the application for completeness and may request additional information.
3. Once the application is complete, Regional Board staff determines whether the Regional Board should adopt WDRs, prohibit the discharge, or waive the WDRs.
4. If WDRs should be issued, Regional Board staff prepares proposed WDRs, and distributes them to persons and public agencies with known interest in the project for a minimum of 30 day comment period. Regional

Board staff may modify the proposed WDRs based upon comments received from the discharger and interested parties.

5. The Regional Board holds a public hearing with at least a 30 day public notification. The Regional Board may adopt the proposed WDRs or modify and adopt them at the public hearing by majority vote.

The entire process for developing and adopting the requirements normally takes about three months.

8. What is the annual fee?

See application fee.

9. How long is this permit in effect?

Waste Discharge Requirements (WDRs) are in effect until such time as you terminate your discharge, or until revoked by the Regional WQCB. NPDES permits expire after 5 years and must be reissued.

10. How can I avoid the most common mistakes made in applying for this permit?

It is highly recommended that you contact the appropriate RWQCB *BEFORE* you start to fill out the Form 200 (and any other accompanying forms). Discussion with RWQCB staff before hand can save you a lot of time and effort.

11. What are the regulations that apply to this permit? Where can I get copies?

Discharges in California are regulated under the California Water Code. Discharges to surface waters are regulated additionally under the Clean Water Act and 40 Code of Federal Regulations (CFR).

12. Questions? Call...

You should contact the appropriate RWQCB if you have any questions or concerns regarding the use of this Form. Please see the State map to determine the appropriate RWQCB you should contact. Telephone numbers for the RWQCBs are listed beside the map.



California Regional Water Quality Control Board

Los Angeles Region



Linda S. Adams
Agency Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.waterboards.ca.gov/losangeles>

Arnold Schwarzenegger
Governor

NOTICE OF INTENT

TO COMPLY WITH GENERAL WASTE DISCHARGE REQUIREMENTS
AND
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

SECTION I. DISCHARGE STATUS

Check only one item.						
A. New Discharge	<input type="checkbox"/>	B. Material Change	<input type="checkbox"/>	C. Existing Discharge	<input type="checkbox"/>	CI # _____

SECTION II. OWNER/OPERATOR & FACILITY INFORMATION

A. OWNER					
Name/Agency			Contact Person		
Mailing Address			Title of Contact Person		
City	County	State	ZIP	Phone	
B. OPERATOR (If different from owner)					
Name/Agency			Contact Person		
Mailing Address			Title of Contact Person		
City	County	State	ZIP	Phone	
C. FACILITY					
Name			Owner Type (check one) 1. <input type="checkbox"/> City 2. <input type="checkbox"/> County 3. <input type="checkbox"/> State 4. <input type="checkbox"/> Fed 5. <input type="checkbox"/> Private		
Address			Contact email address		
City	County	State	ZIP	Phone	
D. STANDARD INDUSTRIAL CLASSIFICATION CODE (SIC) (4 digit code in order of priority)					
1.)	(specify)	2.)	(specify)		
3.)	(specify)	4.)	(specify)		
Nature of Business (provide a brief description)					

SECTION III. APPLICABLE GENERAL PERMIT FOR DISCHARGE

Check only one item.

- Volatile Organic Compounds Contaminated Groundwater (Order No. R4-2007-0022), Include Supplemental Analysis
- Wastewaters from Investigation and/or Cleanup of Petroleum Fuel Pollution (Order No. R4-2007-0021), Include Supplemental Analysis
- Discharges of Groundwater from Potable Water Supply Wells (Order No. R4-2003-0108), Include Attachment A – Screening Levels
- Discharges of Groundwater from Construction and Project Dewatering (Order No. R4-2008-0032), Include Supplemental Analysis
- Discharge of Nonprocess Wastewater (Order No. R4-2009-0047), Include Supplemental Analysis
- Hydrostatic Test Water (Order No. 2009-0068), Include Attachment A – Screening Levels

SECTION IV. EXISTING REQUIREMENTS/PERMITS (Skip if not applicable)

List any active Orders or Permits adopted by this Regional Board for the facility.

A. Order No. _____

B. NPDES Permit(s) _____

SECTION V. OUTFALL AND RECEIVING WATER INFORMATION

List outfall and receiving waterbody (river; stream; channel; lake; ocean; etc.)

Outfall Number (list)	Latitude			Longitude			Receiving Water (Name)
	Deg	Min	Sec	Deg	Min	Sec	

SECTION VI. PROJECT DESCRIPTION AND TREATMENT PROCESS DESCRIPTION (if applicable)

Provide description of the project and the discharge requiring NPDES permit. If additives are added to your process, briefly describe their composition if the information is available. If treatment is necessary prior to discharge, attached a schematic flow diagram and provide description of all treatment processes. In addition, include the proposed maximum daily discharge volume in gallons per day (gpd), the approximate start-up date for the project and discharge, and the projected discharge duration. (attach additional sheets, if necessary)

Proposed Maximum Discharge Flow (gallons per day (gpd))	
Proposed discharge startup date	
Estimated discharge duration	

SECTION VII. DISCHARGE QUALITY INFORMATION

This NOI requires that you obtain and analyze representative influent wastewater sample for the pollutants listed on Attachment A.

Have you included a completed **Supplemental Pollutants Analysis/Measurements Form**? Yes No

OR:

Have you included a completed Attachment A – **Screening for Potential Pollutants of Concern in Potable Water**?
(Applies only to potable water related discharges.) Yes No

If **No**, explain.

(Note: Include the analytical data from the laboratory with the screening forms)

SECTION VIII. OTHER REQUIRED INFORMATION

Provide a 7.5' USGS Quadrangle Map (Scale 1:24,000) showing the project location and identifying surface water to which you propose to discharge.

Fees: Have you included appropriate filing fee with this submittal? (Applicable to new enrollees only)
Make checks payable to the Water Resources Control Board

SECTION IX. CERTIFICATION AND SIGNATURE (see appendix on who is authorized to sign)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I assure that the provisions of the permit will be complied with."

_____ Printed Name of Person Signing

_____ Date

_____ Signature

_____ Title

SECTION X. FORM SUBMITTAL

Send this completed Notice of Intent to:
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Assistance with this form may be obtained by contacting the Regional Board at:
Phone (213) 576-6600
Fax (213) 576-6660

**2. Notice of Non-Applicability – Los Angeles
Regional Water Quality Control Board**

NOTICE OF NON-APPLICABILITY

OF COVERAGE UNDER THE NPDES GENERAL PERMIT NO. CAS000001
FOR DISCHARGES OF STORM WATER
ASSOCIATED WITH INDUSTRIAL ACTIVITY

Submission of this Notice of Non-Applicability constitutes notice that the owner/operator of the facility identified on this form is not required to comply with NPDES General Permit NO. CAS000001. Only discharges that have not filed an NOI should file this form. If you have an NOI but you wish to terminate coverage, you must file a Notice of Termination form with your Regional Water Board office. If you are unsure whether or not your facility is required to comply with the General Permit, please contact the Regional Water Quality Control Board at **(213) 576-6600**. When completed, mail this form to: **Regional Water Quality Control Board, 320 W. 4th Street, suite 200, Los Angeles, CA 90013.**

- I. **OWNER/OPERATOR** If you are not the current owner/operator, check this box and provide your name and address.

COMPANY NAME _____ CONTACT PERSON _____
STREET ADDRESS _____ TITLE _____
CITY _____ STATE _____ ZIP _____ PHONE _____
TYPE OF BUSINESS CONDUCTED AT FACILITY _____

- II. **FACILITY/SITE INFORMATION** (if different from above)

COMPANY NAME _____ CONTACT PERSON _____
STREET ADDRESS _____ TITLE _____
CITY _____ STATE _____ ZIP _____ PHONE _____
TYPE OF BUSINESS CONDUCTED AT FACILITY _____

- III. **BASIS OF NON-APPLICABILITY**

- _____ 1. The facility is closed and all clean-up, closure, and moving activities are complete.
Date of closure ____/____/____
- _____ 2. There is no exposure of industrial activities to storm water. (Applies to the following SIC codes: 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323,34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-4225).
SIC CODE __/__/__/__ (MANDATORY)
- _____ 3. Storm water associated with industrial activities does not discharge to waters of the United States.
_____ a. All industrial storm water is always retained on site.
_____ b. All industrial storm water is treated and disposed of with processed wastewater.
_____ c. All industrial storm water is discharged to a municipal sanitary sewer system or municipal combined sewer system.
_____ d. All industrial storm water is discharged to evaporation ponds or percolation ponds offsite.

_____ 4. The facility is not required by federal regulations to be covered by a storm water permit because it is not engaged in an industrial activity covered by the regulations.

SIC CODE (if known) ___/___/___/___/

_____ 5. Discharge of industrial storm water from the facility is subject to another NPDES general permit or to an individual NPDES permit.

NPDES Permit No. _____

_____ 6. There is a new owner/operator of the identified facility.

Date of owner/operator transfer ___/___/___ Has the new owner/operator been notified of NPDES General Permit requirements? Yes___No___

NEW OWNER/OPERATOR INFORMATION

COMPANY NAME _____ **CONTACT PERSON** _____

STREET ADDRESS _____ **TITLE** _____

CITY _____ **STATE** _____ **ZIP** _____ **PHONE** _____

_____ 7. I am not and have never been the owner/operator of the identified facility.

_____ 8. Other (Please explain) non-applicability.

IV. CERTIFICATION

I certify under penalty of law that the identified facility is not required to be permitted under NPDES General Permit No. CAS000001 or that I am not the owner/operator of the facility. I understand that discharging storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where discharge is not authorized by a NPDES permit. I also understand that submittal of this Notice of Non-Applicability does not release an owner/operator from liability for any violations of the General Permit or Clean Water Act.

PRINTED NAME _____ **TITLE** _____

SIGNATURE _____ **DATE** / / _____

STATE AND REGIONAL BOARD USE ONLY

3. Stormwater Management in California - State Water Resources Control Board



Fact Sheet

STATE WATER RESOURCES CONTROL BOARD | 1001 I Street, Sacramento, CA 95814 | Mailing Address: P. O. Box 100, Sacramento, CA 95812-0100 | www.waterboards.ca.gov

Storm Water Management in California

Stopping the Spread of Pollution

Water runoff from our cities, highways, industrial facilities and construction sites can carry pollutants that harm water quality and impair the beneficial uses of our waters - beneficial uses that belong to all Californians and entrusted to us to protect. For nearly two decades, the State Water Resources Control Board (State Water Board) and the US Environmental Protection Agency have regulated the runoff and treatment of storm water in industrial, municipal and residential areas of California. The effort falls into several distinct categories with the same goal to use storm water as a resource and to reduce harmful pollutants, fertilizers, debris and other materials carried into storm drains, drainage systems and ultimately our rivers, lakes, and ocean.

While early program efforts focused on controlling pollutants and implementing good management practices, the program is now also emphasizing holistic strategies aimed at not only preventing problems but providing many community benefits. Storm water is an important resource and Low Impact Development and Green Infrastructure techniques are now capitalizing on opportunities in California. The goal is to capture the water that runs off concrete and non-permeable surfaces and use it, for example, to water trees, plants and other living things on the same plot of land from which it would flow away. Groundwater supplies are replenished, too, and the amount of pollutants that flow into our waterways is reduced.

Federal and State Partnership

The Water Boards draw authority for storm water regulation from the federal Water Pollution Control Act (Clean Water Act) and from direction within the Clean Water Act which puts the framework for regulating storm water discharges under the National Pollutant Discharge Elimination System (NPDES) Permit system.

Cities and other jurisdictions that operate large and medium and small storm water systems as well as specific industrial activity sites, including construction sites that disturb more than an acre of land, must apply for storm water permits. The State Water Board provides policy and regulatory oversight, on behalf of the federal government.

California has Several Storm Water Regulatory Program Areas

- **Construction:** Projects that disturb one or more acres of soil or that disturb less than one acre but are part of a larger common plan of development, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity. The permit is based on a project's overall risk and requires measures to prevent erosion and reduce sediment and other pollutants in their discharges. There have been as many as 15,000 active permittees in this program area in the past. ([SWRCB Order No. 2009-0009-DWQ](#) was adopted in 2009 and became effective July 1, 2010).
- **Industrial:** Specific industrial activities must use the best technology available to reduce pollutants in their discharges. In addition, they are required to develop both a storm water pollution prevention plan and a way to monitor their progress. There is an average of 10,000 active permittees in this program area. ([SWRCB Order No. 97-03-DWQ](#) is expired and its [replacement](#) is undergoing public review in 2011).

- **Municipal:** Large and small municipal sewer system operators must comply with permits that regulate storm water entering their systems under a two phase system. Phase 1 regulates storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. The second phase regulates smaller municipalities, including non-traditional small operations, such as military bases, public campuses, and prison and hospital complexes. The largest, single municipal discharger in California is the California Department of Transportation (Caltrans) and their network of highways and road facilities. In addition to Caltrans there are 21 Phase I municipal permits and 125 permittees enrolled in the statewide Phase II municipal permit. (*Caltrans Status: [Pending Public Review](#)*). (*Phase II Status: [SWRCB Order No. 2003-0005-DWQ](#) is expired and its replacement will undergo public review in the second half of 2011*).

Emerging Areas for Study, Regulation and Monitoring

Recent legislation and awareness of environmental challenges have led to innovative approaches in storm water runoff management and regulation. In addition, the Water Board has established an online database to allow regulated entities to view reports and information on water quality control efforts with storm water. Please visit the Stormwater Multiple Application and Report Tracking System – ([SMARTS](#)) here:

<https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp>

- **[Regulation of Pre-Production Plastics](#)** – The discharge of pre-production plastic pellets via storm water threatens California's aquatic environment. Potential sources of preproduction plastic pellets include manufacturers, transporters, warehouse, processors, and recyclers. Some industrial facilities that either produce or handle these plastic pellets are covered by the industrial permit. The Water are investigating all aspects of this emerging area and taking appropriate actions.
- **[Low Impact Development \(LID\) and Green Infrastructure \(GI\)](#)** - LID is a sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which collects and conveys storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID takes a different approach by using site design and storm water management to maintain the site's pre-development runoff rates and volumes. GI carries this approach to a larger, community scale and presents similar, sustainable opportunities to local governments and regional projects. The Water Boards are leading the way towards more water-friendly landscapes in California.
- **[Effects of Changes in Flows and Sediment Loads to Waterways](#)** – Changes in flow and sediment loads to streams and other watercourses can result in significant and long-standing impacts to beneficial uses of our waters. These changes are collectively referred to as "hydromodification." The Water Boards have teamed with some of the nation's top scientists to devise ground breaking ways to effectively and efficiently measure and control the impacts associated with hydromodification.

Storm Water Management Oversight and Regulation a Priority

The Water Boards have been focused for more than 20 years in the area of storm water quality management and regulation. The Water Boards continue to strive to ensure that surface and ground water resources remain useful and managed in a sustainable manner for generations to come.

For more information please visit the following links or contact us directly:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/

- General Inquiries: stormwater@waterboards.ca.gov
- Telephone Toll Free - 1-866-563-3107

**4. Stormwater Pollution Prevention Plan Checklist -
State Water Resources Control Board**

STORM WATER POLLUTION PREVENTION PLAN and MONITORING PROGRAM REVIEW SHEET

GENERAL INDUSTRIAL ACTIVITIES STORM WATER PERMIT WATER QUALITY ORDER NO. 97-03-DWQ

FACILITY NAME _____

WDID# 4 _____

REVIEW DATE _____

FACILITY CONTACT

Name _____
Title _____
Company _____
Street Address _____
City, State _____
Zip _____

CONSULTANT CONTACT

Name _____
Title _____
Company _____
Street Address _____
City, State _____
Zip _____

Indication of WDID# YES NO

STORM WATER POLLUTION PREVENTION PLAN		Not Applicable	Included	Not Included	Incomplete	Comments
Signed Certification	(C.9 and C.10)					
Pollution Prevention Team	(A.3.a)					
Existing Facility Plans	(A.3.b)					
Facility Site Map(s)						
Facility boundaries	(A.4.a)					
Drainage areas	(A.4.a)					
Direction of flow	(A.4.a)					
On-site water bodies	(A.4.a)					
Areas of soil erosion	(A.4.a)					
Nearby water bodies	(A.4.a)					
Municipal storm drain inlets	(A.4.a)					
Points of discharge	(A.4.b)					
Structural control measures	(A.4.b)					
Impervious areas (paved areas, buildings, covered areas, roofed areas)	(A.4.c)					
Location of directly exposed materials	(A.4.d)					
Locations of significant spills and leaks	(A.4.d)					
Storage areas / Storage tanks	(A.4.e)					
Shipping and receiving areas	(A.4.e)					
Fueling areas	(A.4.e)					
Vehicle and equipment storage and maintenance	(A.4.e)					
Material handling / Material processing	(A.4.e)					
Waste treatment / Waste disposal	(A.4.e)					
Dust generation / Particulate generation	(A.4.e)					

Items in parentheses refer to specific sections of the General Permit

Reviewer _____

**STORM WATER
POLLUTION PREVENTION PLAN**

		Not Applicable	Included	Not Included	Incomplete	Comments
List of Significant Materials (A.5)						
For each material listed:						
Storage location						
Receiving and shipping location						
Handling location						
Quantity						
Frequency						
Description of Potential Pollution Sources(A.6)						
Industrial processes	(A.6.a.i)					
Material handling and storage areas	(A.6.a.ii)					
Dust and particulate generating activities	(A.6.a.iii)					
Significant spills and leaks	(A.6.a.iv)					
Non-storm water discharges	(A.6.a.v)					
Soil erosion	(A.6.a.vi)					
Assessment of Potential Pollutant Sources(A.7)						
Areas likely to be sources of pollutants	(A.7.a.i)					
Pollutants likely to be present	(A.7.a.ii)					
Storm Water Best Management Practices (A.8)						
Existing BMPs						
Existing BMPs to be revised and/or implemented						
New BMPs to be implemented						
Non-structural BMPs (A.8.a)						
Good housekeeping	(A.8.a.i)					
Preventative maintenance	(A.8.a.ii)					
Spill response	(A.8.a.iii)					
Material handling and storage	(A.8.a.iv)					
Employee training	(A.8.a.v)					
Waste handling / Waste recycling	(A.8.a.vi)					
Recordkeeping and internal reporting	(A.8.a.vii)					
Erosion control and site stabilization	(A.8.a.viii)					
Inspections	(A.8.a.ix)					
Quality assurance	(A.8.a.x)					
Structural BMPs (A.8.b)						
Overhead coverage	(A.8.b.i)					
Retention ponds	(A.8.b.ii)					
Control devices	(A.8.b.iii)					
Secondary containment structures	(A.8.b.iv)					
Treatment	(A.8.b.v)					
Annual Comprehensive Site Compliance Evaluation						
Review of visual observations, inspections, and sampling analysis	(A.9.a)					
Visual inspection of potential pollution sources	(A.9.b)					
Review and evaluation of BMPs	(A.9.c)					
Evaluation report	(A.9.d)					

MONITORING PROGRAM

	Not Applicable	Included	Not Included	Incomplete	Comments
Quarterly Non-Storm Water Discharge Visual Observations (B.3)					
Observations to be conducted (Jan-March, April-June, July-September, October-December) (B.3.c)					
All drainage areas (B.3.a)					
Look for presence of unauthorized NSWDS (B.3.a)					
Observe authorized NSWDS (B.3.b)					
Maintain observation records (B.3.d)					
Storm Water Discharge Visual Observations (B.4)					
Once per month during wet season (October 1-May 31) (B.4.a)					
Observe during first hour of discharge (B.4.a)					
All drainage areas (B.4.a)					
Observe stored or contained storm water at time of discharge (B.4.a)					
Preceded by three working days dry weather (B.4.c)					
Document discharge characteristics (B.4.c)					
Sampling and Analysis					
Samples to be collected during first hour of discharge (B.5.a)					
Sample from first storm of the wet season (B.5.a)					
Sample from one additional storm during wet season (B.5.a)					
Samples collected from all discharge locations (B.5.a)					
Sampling of contained storm water at time of discharge (B.5.a)					
Sampling preceded by at least three working days without storm water discharges (B.5.b)					
Sampling for pH, TSS, SC, TOC or O&G (B.5.c.i)					
Sampling for toxic chemicals and other pollutants likely present in storm water discharges in significant quantities (B.5.c.ii)					
Other analytical parameters listed in Table D (B.5.c.iii)					
Storm Water Effluent Limitation Guidelines parameters (B.6)					
Description of sampling locations (B.7)					
Description of sampling methods (B.10)					
Identification of analytical methods and method detection limits (B.10.b)					
Retention of all records for at least five years (B.13)					
Annual Report to be submitted by July 1 each year (B.14)					

General Comments:

G. Hazardous Materials and Hazardous Waste

- 1. California Health and Safety Code – Business Plans and Reporting**

HEALTH AND SAFETY CODE

SECTION 25500-25520

25500. The Legislature declares that, in order to protect the public health and safety and the environment, it is necessary to establish business and area plans relating to the handling and release or threatened release of hazardous materials. The establishment of minimum statewide standards for these plans is a statewide concern. Basic information on the location, type, quantity, and the health risks of hazardous materials handled, used, stored, or disposed of in the state, which could be accidentally released into the environment, is not now available to firefighters, health officials, planners, public safety officers, health care providers, regulatory agencies, and other interested persons. The information provided by business and area plans is necessary in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of hazardous materials into the workplace and environment.

The Legislature further finds and declares that this chapter does not occupy the whole area of regulating the inventorying of hazardous materials and the preparation of hazardous materials response plans by businesses and the Legislature does not intend to preempt any local actions, ordinances, or regulations which impose additional or more stringent requirements on businesses which handle hazardous materials. Thus, in enacting this chapter, it is not the intent of the Legislature to preempt or otherwise nullify any other statute or local ordinances containing the same or greater standards and protections.

25501. Unless the context indicates otherwise, the following definitions govern the construction of this chapter:

- (a) "Administering agency" means the local agency authorized, pursuant to Section 25502, to implement and enforce this chapter.
- (b) "Agency" means the California Emergency Management Agency.
- (c) "Agricultural handler" means an entity identified in paragraph (5) of subdivision (c) of Section 25503.5.
- (d) "Area plan" means a plan established pursuant to Section 25503 by an administering agency for emergency response to a release or threatened release of a hazardous material within a city or county.
- (e) "Business" means an employer, self-employed individual, trust, firm, joint stock company, corporation, partnership, or association. For purposes of this chapter, "business" includes a business organized for profit and a nonprofit business.
- (f) "Business plan" means a separate plan for each facility, site, or branch of a business that meets the requirements of Section 25504.
- (g) "Certification statement" means a statement signed by the business owner, operator, or officially designated representative that attests to all of the following:
 - (1) The information contained in the annual inventory form most recently submitted to the administering agency is complete, accurate, and up to date.
 - (2) There has been no change in the quantity of any hazardous material as reported in the most recently submitted annual inventory form.
 - (3) No hazardous materials subject to the inventory requirements of this chapter are being handled that are not listed on the most recently submitted annual inventory form.

(4) The most recently submitted annual inventory form contains the information required by Section 11022 of Title 42 of the United States Code.

(h) (1) "Certified Unified Program Agency" or "CUPA" means the agency certified by the secretary to implement the unified program specified in Chapter 6.11 (commencing with Section 25404) within a jurisdiction.

(2) "Participating Agency" or "PA" means an agency that has a written agreement with the CUPA pursuant to subdivision (d) of Section 25404.3, and is approved by the secretary, to implement or enforce one or more of the unified program elements specified in paragraphs (4) and (5) of subdivision (c) of Section 25404, in accordance with the provisions of Sections 25404.1 and 25404.2.

(3) "Unified Program Agency" or "UPA" means the CUPA, or its participating agencies to the extent each PA has been designated by the CUPA, pursuant to a written agreement, to implement or enforce a particular unified program element specified in paragraphs (4) and (5) of subdivision (c) of Section 25404. For purposes of this chapter, the UPAs have the responsibility and authority, to the extent provided by this chapter and Sections 25404.1 and 25404.2, to implement and enforce only those requirements of this chapter listed in paragraphs (4) and (5) of subdivision (c) of Section 25404. The UPAs also have the responsibility and authority, to the extent provided by this chapter and Sections 25404.1 and 25404.2, to implement and enforce the regulations adopted to implement the requirements of this chapter listed in paragraphs (4) and (5) of subdivision (c) of Section 25404. After a CUPA has been certified by the secretary, the unified program agencies shall be the only local agencies authorized to enforce the requirements of this chapter listed in paragraphs (4) and (5) of subdivision (c) of Section 25404 within the jurisdiction of the CUPA.

(i) "City" includes any city and county.

(j) "Chemical name" means the scientific designation of a substance in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the system developed by the Chemical Abstracts Service.

(k) "Common name" means any designation or identification, such as a code name, code number, trade name, or brand name, used to identify a substance by other than its chemical name.

(l) "Department" means the Department of Toxic Substances Control and "director" means the Director of Toxic Substances Control.

(m) "Emergency rescue personnel" means any public employee, including, but not limited to, any fireman, firefighter, or emergency rescue personnel, as defined in Section 245.1 of the Penal Code, or personnel of a local EMS agency, as designated pursuant to Section 1797.200, or a poison control center, as defined by Section 1797.97, who responds to any condition caused, in whole or in part, by a hazardous material that jeopardizes, or could jeopardize, public health or safety or the environment.

(n) "Handle" means to use, generate, process, produce, package, treat, store, emit, discharge, or dispose of a hazardous material in any fashion.

(o) "Handler" means any business that handles a hazardous material.

(p) "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

(q) "Hazardous substance" means any substance or chemical product

for which one of the following applies:

(1) The manufacturer or producer is required to prepare a MSDS for the substance or product pursuant to the Hazardous Substances Information and Training Act (Chapter 2.5 (commencing with Section 6360) of Part 1 of Division 5 of the Labor Code) or pursuant to any applicable federal law or regulation.

(2) The substance is listed as a radioactive material in Appendix B of Chapter 1 of Title 10 of the Code of Federal Regulations, maintained and updated by the Nuclear Regulatory Commission.

(3) The substances listed pursuant to Title 49 of the Code of Federal Regulations.

(4) The materials listed in subdivision (b) of Section 6382 of the Labor Code.

(r) "Hazardous waste" means hazardous waste, as defined by Sections 25115, 25117, and 25316.

(s) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency.

(t) "Secretary" means the Secretary for Environmental Protection.

(u) "SIC Code" means the identification number assigned by the Standard Industrial Classification Code to specific types of businesses.

(v) "Threatened release" means a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce, or mitigate damages to persons, property, or the environment.

(w) "Trade secret" means trade secrets as defined in subdivision (d) of Section 6254.7 of the Government Code and Section 1060 of the Evidence Code.

(x) "Unified Program Facility" means all contiguous land and structures, other appurtenances, and improvements on the land that are subject to the requirements of paragraphs (4) and (5) of subdivision (c) of Section 25404.

25501.1. Notwithstanding Section 25501, for purposes of this chapter, a hazardous substance specified in paragraph (3) of subdivision (k) of Section 25501 means those hazardous materials or substances listed in Parts 172 and 173 of Title 49 of the Code of Federal Regulations.

25501.2. For purposes of the inventory requirements of this chapter, "store," as used in subdivision (i) of Section 25501, does not include the storage of hazardous materials which are in transit or which are temporarily maintained in a fixed facility for a period of less than 30 days during the course of transportation.

25501.3. "Handle" also means the use or potential for use of a quantity of hazardous material by the connection of any marine vessel, tank vehicle, tank car, or container to a system or process for any purpose other than the immediate transfer to or from an approved atmospheric tank or approved portable tank.

25501.4. Notwithstanding subdivision (d) of Section 25501, "business" also includes all of the following:

(a) The federal government, to the extent authorized by federal law.

(b) Any agency, department, office, board, commission, or bureau of state government, including, but not limited to, the campuses of the California Community Colleges, the California State University, and the University of California.

(c) Any agency, department, office, board, commission, or bureau of a city, county or district.

25502. (a) (1) This chapter, as it pertains to the handling of hazardous material, shall be implemented by one of the following:

(A) If there is a CUPA, the Unified Program Agency.

(B) If there is no CUPA, the agency authorized pursuant to subdivision (f) of Section 25404.3.

(2) The agency responsible for implementing this chapter shall ensure full access to, and the availability of, information submitted under this chapter to emergency rescue personnel and other appropriate governmental entities within its jurisdiction.

(b) (1) If there is no CUPA, a city may, by ordinance or resolution, assume responsibility for the implementation of this chapter and, if so, shall have exclusive jurisdiction within the boundary of the city for the purposes of carrying out this chapter. The ordinance shall require that a person who violates Section 25507 shall be subject to the penalties specified in Section 25515. A city that assumes responsibility for implementation of this chapter shall provide notice of its ordinance or resolution to the agency and to the administering agency of its county. It shall also consult with, and coordinate its activities with, the county in which the city is located to avoid duplicating efforts or any misunderstandings regarding the areas, duties, and responsibilities of each administering agency.

(2) A city may not assume responsibility for the implementation of this chapter unless it has enacted an implementing ordinance or adopted an implementing resolution not later than 60 days after the agency adopts regulations pursuant to Section 25503, except that a city may enact an implementing ordinance or adopt an implementing resolution after this 60-day period, if it has an agreement with the county to do so. A new city has one year from the date of incorporation to enact an ordinance or adopt a resolution implementing this chapter.

(3) The local agency responsible for administering and enforcing this chapter shall be the agency so authorized pursuant to subdivision (f) of Section 25404.3.

(c) If there is no CUPA, the county and any city that assume responsibility pursuant to subdivision (b) shall designate a department, office, or other agency of the county or city, as the case may be, or the city or county may designate a fire district, as the administering agency responsible for administering and enforcing this chapter. The county and any city that assume responsibility pursuant to subdivision (b) shall notify the agency immediately upon making a designation. The local agency responsible for administering and enforcing this chapter shall be the agency so authorized pursuant to subdivision (f) of Section 25404.3.

25503. (a) Not later than September 1, 1986, the agency shall adopt, after public hearing and consultation with the Office of the State Fire Marshal and other appropriate public entities, regulations for minimum standards for business plans and area plans. All business plans and area plans shall meet the standards adopted by the agency.

(b) The standards for business plans in the regulations adopted

pursuant to subdivision (a) shall do all of the following:

(1) Set forth minimum requirements of adequacy, and not preclude the imposition of additional or more stringent requirements by local government.

(2) Take into consideration and adjust for the size and nature of the business, the proximity of the business to residential areas and other populations, and the nature of the damage potential of its hazardous materials in establishing standards for subdivisions (b) and (c) of Section 25504.

(3) Take into account the existence of local area and business plans which meet the requirements of this chapter so as to minimize the duplication of local efforts, consistent with the objectives of this chapter.

(4) Define what releases and threatened releases are required to be reported pursuant to Section 25507. The agency shall consider the existing federal reporting requirements in determining a definition of reporting releases pursuant to Section 25507.

(c) An administering agency shall establish an area plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction. An area plan is not a statute, ordinance, or regulation for purposes of Section 669 of the Evidence Code. The standards for area plans in the regulations adopted pursuant to subdivision (a) shall provide for all of the following:

(1) Procedures and protocols for emergency rescue personnel, including the safety and health of those personnel.

(2) Preemergency planning.

(3) Notification and coordination of onsite activities with state, local, and federal agencies, responsible parties, and special districts.

(4) Training of appropriate employees.

(5) Onsite public safety and information.

(6) Required supplies and equipment.

(7) Access to emergency response contractors and hazardous waste disposal sites.

(8) Incident critique and followup.

(9) Requirements for notification to the agency of reports made pursuant to Section 25507.

(d) (1) The administering agency shall submit a copy of its proposed area plan, within 180 days after adoption of regulations by the agency establishing area plan standards, to the agency for review. The agency shall notify the administering agency as to whether the area plan is adequate and meets the area plan standards. The administering agency shall within 45 days of this notice submit a corrected area plan.

(2) The administering agency shall certify to the agency every three years that it has conducted a complete review of its area plan and has made any necessary revisions. Any time an administering agency makes any substantial changes to its area plan, it shall forward the changes to the agency within 14 days after the changes have been made.

(e) An administering agency shall submit to the agency, along with its area plan, both of the following:

(1) The basic provisions of a plan to conduct onsite inspections of businesses subject to this chapter by either the administering agency or other designated entity. These inspections shall ensure compliance with this chapter and shall identify existing safety hazards that could cause or contribute to a release and, where appropriate, enforce any applicable laws and suggest preventative measures designed to minimize the risk of the release of hazardous material into the workplace or environment. The requirements of this paragraph do not alter or affect the immunity provided a public entity pursuant to Section 818.6 of the Government Code.

(2) A plan to institute a data management system which will assist in the efficient access to and utilization of information collected under this chapter. This data management system shall be in operation

within two years after the business plans are required to be submitted to the administering agency pursuant to Section 25505.

(f) The regulations adopted by the agency pursuant to subdivision (a) shall include an optional model reporting form for business and area plans.

25503.1. The agency and each administering agency shall adopt reporting requirements, in cooperation with the Chemical Emergency Planning and Response Commission, established by the Governor as the state emergency response commission pursuant to subsection (a) of Section 11001 of Title 42 of the United States Code, which are consistent with the intent and provisions of this chapter and with Chapter 116 (commencing with Section 11001) of Title 42 of the United States Code, for the purpose of eliminating duplicative reporting requirements, to the extent achievable and practicable.

25503.2. (a) The Environmental Affairs Agency, with the guidance of the Chemical Emergency Planning and Response Commission, as specified in Section 25503.1, shall develop a hazardous materials compliance assistance manual, which shall include all of the following:

(1) A copy of each form required by federal and state agencies for the reporting of activities concerning hazardous materials and criteria as to who is required to file the form.

(2) The due date for each form specified in paragraph (1).

(3) The address, telephone number, and contact person of each federal and state agency which requires the reporting forms specified in paragraph (1).

(4) An insert that contains a copy of each form used for the reporting of activities concerning hazardous materials required by each local agency under whose jurisdiction the person requesting the manual conducts business, including the due date for each form, and the address, telephone number, and contact person of each local agency.

(5) Any other information that the Environmental Affairs Agency determines to be necessary.

(b) On or before July 1, 1991, the Environmental Affairs Agency, with the guidance of the Chemical Emergency Planning and Response Commission, shall make known to businesses and other interested parties, and distribute, upon request, the hazardous materials compliance assistance manual developed pursuant to subdivision (a). The Secretary of the Environmental Affairs Agency may impose a fee for the manual to pay for all costs related to the development, maintenance, reproduction, and distribution of the manual.

25503.3. (a) The agency shall, in consultation with the administering agencies, in accordance with Section 25503.1, adopt by regulation a single comprehensive hazardous material reporting form for businesses to submit to administering agencies for purposes of Section 25509. The form shall include a section for additional information that may be requested by the administering agency. The regulations shall also specify criteria for sharing data electronically. Except as provided in subdivisions (b) and (c), after January 1, 1997, each administering agency shall require businesses to use this form annually when complying with Section 25509.

(b) (1) Except as provided in paragraph (2), an administering agency may allow a business to submit a form designated by the administering agency for purposes of the inventory required by

Section 25509 instead of the single comprehensive hazardous material reporting form adopted pursuant to subdivision (a). Any form designated by an administering agency pursuant to this paragraph shall ensure that all of the information required by Section 25509 is reported. The form shall be developed in consultation with the other agencies within the jurisdiction that are responsible for fire protection, emergency response, and environmental health. If the administering agency permits inventory information to be submitted by electronic means, the format and mode of submittal shall be developed in consultation with those other agencies and, following the adoption of standards for the sharing of electronic data pursuant to subdivision (e) of Section 25404, shall be consistent with those standards.

(2) If a business chooses to submit the single comprehensive hazardous material reporting form adopted pursuant to subdivision (a), the administering agency shall accept that form.

(c) Notwithstanding Section 25509, a business may comply with the annual inventory reporting requirements of this article by submitting a certification statement to the administering agency if both of the following apply:

(1) The business has previously filed the single comprehensive hazardous material reporting form required by subdivision (a) or the alternative form designated by the administering agency pursuant to subdivision (b).

(2) The business can attest to the statements set forth in paragraphs (1) to (4), inclusive, of subdivision (f) of Section 25501.

25503.4. (a) The agency shall adopt a format that allows persons subject to two or more of the following requirements to meet those requirements in one document:

(1) The business plan required by this chapter.

(2) The risk management plan required by Section 25534.

(3) The contingency plan required by Division 4.5 (commencing with Section 66001) of Title 22 of the California Code of Regulations and by Part 262 (commencing with Section 262.10), Part 264 (commencing with Section 264.1), or Part 265 (commencing with Section 265.1) of Title 40 of the Code of Federal Regulations.

(4) The spill prevention control and countermeasure plan required by Section 25270.4.5 and by Part 112 (commencing with Section 112.1) or by Part 300 (commencing with Section 300.1) of Title 40 of the Code of Federal Regulations.

(5) Any accident or spill prevention plan or response plan required by Chapter 6.7 (commencing with Section 25280) or by regulations adopted pursuant to that chapter or required by an underground storage tank ordinance adopted by a city or county.

(6) The interim marine facility oil spill contingency plan required by Section 8670.29 of the Government Code and the marine facility oil spill contingency plan required by Section 8670.31 of the Government Code.

(b) The format required by subdivision (a) shall be organized as follows:

(1) A central element that will enable persons using the format to report information and data common to all of the requirements described in subdivision (a).

(2) Appendices that will contain the additional information unique to each individual requirement described in subdivision (a).

(c) The agency shall adopt the format required by subdivision (a) in consultation with administering agencies and the Information Management Subcommittee of the Chemical Emergency Planning and Response Commission and in cooperation with the State Water Resources Control Board, the Department of Fish and Game, and the department. The adoption of the format is not subject to Chapter 3.5 (commencing

with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code and shall be completed by January 1, 1995. To the extent feasible, and within the limits of budgetary constraints, the agency, the State Water Resources Control Board, the Department of Fish and Game, and the department shall convene workshops and other public meetings to obtain public assistance on the development of the format.

25503.5. (a) (1) A business, except as provided in subdivisions (b), (c), and (d), shall establish and implement a business plan for emergency response to a release or threatened release of a hazardous material in accordance with the standards prescribed in the regulations adopted pursuant to Section 25503, if the business handles a hazardous material or a mixture containing a hazardous material that has a quantity at any one time during the reporting year that is any of the following:

(A) Equal to, or greater than, a total weight of 500 pounds or a total volume of 55 gallons.

(B) Equal to, or greater than, 200 cubic feet at standard temperature and pressure, if the substance is compressed gas.

(C) If the substance is a radioactive material, it is handled in quantities for which an emergency plan is required to be adopted pursuant to Part 30 (commencing with Section 30.1), Part 40 (commencing with Section 40.1), or Part 70 (commencing with Section 70.1), of Chapter 1 of Title 10 of the Code of Federal Regulations, or pursuant to any regulations adopted by the state in accordance with those regulations.

(2) In meeting the requirements of this subdivision, a business may, if it elects to do so, use the format adopted pursuant to Section 25503.4.

(b) (1) Oxygen, nitrogen, and nitrous oxide, ordinarily maintained by a physician, dentist, podiatrist, veterinarian, or pharmacist, at his or her office or place of business, stored at each office or place of business in quantities of not more than 1,000 cubic feet of each material at any one time, are exempt from this section and from Section 25505. The administering agency may require a one-time inventory of these materials for a fee not to exceed fifty dollars (\$50) to pay for the costs incurred by the agency in processing the inventory forms.

(2) (A) Lubricating oil is exempt from this section and Sections 25505 and 25509, for a single business facility, if the total volume of each type of lubricating oil handled at that facility does not exceed 55 gallons and the total volume of all types of lubricating oil handled at that facility does not exceed 275 gallons, at any one time.

(B) For purposes of this paragraph, "lubricating oil" means any oil intended for use in an internal combustion crankcase, or the transmission, gearbox, differential, or hydraulic system of an automobile, bus, truck, vessel, airplane, heavy equipment, or other machinery powered by an internal combustion or electric powered engine. "Lubricating oil" does not include used oil, as defined in subdivision (a) of Section 25250.1.

(c) (1) Hazardous material contained solely in a consumer product for direct distribution to, and use by, the general public is exempt from the business plan requirements of this chapter unless the administering agency has found, and has provided notice to the business handling the product, that the handling of certain quantities of the product requires the submission of a business plan, or any portion thereof, in response to public health, safety, or environmental concerns.

(2) In addition to the authority specified in paragraph (4), the administering agency may, in exceptional circumstances, following notice and public hearing, exempt from the inventory provisions of this chapter any hazardous substance specified in subdivision (p) of

Section 25501 if the administering agency finds that the hazardous substance would not pose a present or potential danger to the environment or to human health and safety if the hazardous substance was released into the environment. The administering agency shall specify in writing the basis for granting any exemption under this paragraph. The administering agency shall send a notice to the agency within five days from the effective date of any exemption granted pursuant to this paragraph.

(3) The administering agency, upon application by a handler, may exempt the handler, under conditions that the administering agency determines to be proper, from any portion of the business plan, upon a written finding that the exemption would not pose a significant present or potential hazard to human health or safety or to the environment or affect the ability of the administering agency and emergency rescue personnel to effectively respond to the release of a hazardous material, and that there are unusual circumstances justifying the exemption. The administering agency shall specify in writing the basis for any exemption under this paragraph.

(4) The administering agency, upon application by a handler, may exempt a hazardous material from the inventory provisions of this chapter upon proof that the material does not pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or environment. The administering agency shall specify in writing the basis for any exemption under this paragraph.

(5) An administering agency shall exempt a business operating a farm for purposes of cultivating the soil or raising or harvesting any agricultural or horticultural commodity from filing the information in the business plan required by subdivisions (b) and (c) of Section 25504 if all of the following requirements are met:

(A) The handler annually provides the inventory of information required by Section 25509 to the county agricultural commissioner before January 1 of each year.

(B) Each building in which hazardous materials subject to this chapter are stored is posted with signs, in accordance with regulations that the agency shall adopt, that provide notice of the storage of any of the following:

- (i) Pesticides.
- (ii) Petroleum fuels and oil.
- (iii) Types of fertilizers.

(C) Each county agricultural commissioner forwards the inventory to the administering agency within 30 days from the date of receipt of the inventory.

(6) The administering agency shall exempt a business operating an unstaffed remote facility located in an isolated sparsely populated area from the hazardous materials business plan and inventory requirements of this article if the facility is not otherwise subject to the requirements of applicable federal law, and all of the following requirements are met:

(A) The types and quantities of materials onsite are limited to one or more of the following:

- (i) Five hundred standard cubic feet of compressed inert gases (asphyxiation and pressure hazards only).
- (ii) Five hundred gallons of combustible liquid used as a fuel source.

(iii) Two hundred gallons of corrosive liquids used as electrolytes in closed containers.

(iv) Five hundred gallons of lubricating and hydraulic fluids.

(v) One thousand two hundred gallons of flammable gas used as a fuel source.

(B) The facility is secured and not accessible to the public.

(C) Warning signs are posted and maintained for hazardous materials pursuant to the California Fire Code.

(D) A one-time notification and inventory are provided to the administering agency along with a processing fee in lieu of the

existing fee. The fee shall not exceed the actual cost of processing the notification and inventory, including a verification inspection, if necessary.

(E) If the information contained in the initial notification or inventory changes and the time period of the change is longer than 30 days, the notification or inventory shall be resubmitted within 30 days to the administering agency to reflect the change, along with a processing fee, in lieu of the existing fee, that does not exceed the actual cost of processing the amended notification or inventory, including a verification inspection, if necessary.

(F) The administering agency shall forward a copy of the notification and inventory to those agencies that share responsibility for emergency response.

(G) The administering agency may require an unstaffed remote facility to submit a hazardous materials business plan and inventory in accordance with this article if the agency finds that special circumstances exist such that development and maintenance of the business plan and inventory are necessary to protect public health and safety and the environment.

(d) Onpremise use, storage, or both, of propane in an amount not to exceed 300 gallons that is for the sole purpose of heating the employee working areas within that business is exempt from this section, unless the administering agency finds, and provides notice to the business handling the propane, that the handling of the onpremise propane requires the submission of a business plan, or any portion thereof, in response to public health, safety, or environmental concerns.

(e) The administering agency shall provide all information obtained from completed inventory forms, upon request, to emergency rescue personnel on a 24-hour basis.

(f) The administering agency shall adopt procedures to provide for public input when approving any applications submitted pursuant to paragraph (3) or (4) of subdivision (c).

25503.6. Any business which is required to establish and implement a business plan pursuant to Section 25503.5 and is located on leased or rented real property shall notify, in writing, the owner of the property that the business is subject to Section 25503.5 and has complied with its provisions, and shall provide a copy of the business plan to the owner or the owner's agent within five working days after receiving a request for a copy from the owner or the owner's agent.

25503.7. (a) When any hazardous material contained in any rail car, rail tank car, rail freight container, marine vessel, or marine freight container remains within the same railroad facility, marine facility, or business facility for more than 30 days, or a business knows or has reason to know that any rail car, rail tank car, rail freight container, marine vessel, or marine freight container containing any hazardous material will remain at the same railroad facility, marine facility, or business facility for more than 30 days, the hazardous material is deemed stored at that location for purposes of this chapter and subject to the requirements of this chapter.

(b) Subdivision (a) does not apply to a marine vessel while under construction, repair, modernization, or retrofitting while located in a ship repair facility.

(c) Notwithstanding Section 25510, a business handling hazardous materials which are stored in a manner subject to subdivision (a) shall immediately notify the administering agency whenever a hazardous material is stored in a rail car, rail tank car, rail freight container, marine vessel, or marine freight container.

25503.8. (a) Any business not subject to subdivision (a) of Section 25503.5 which is required to submit chemical inventory information pursuant to Section 11022 of Title 42 of the United States Code, as that section reads on January 1, 1989, or as it may be subsequently amended, shall establish and implement a business plan in accordance with Section 25503.5 and Section 25505.

(b) Any business required to establish and implement a business plan pursuant to subdivision (a) shall not be deemed to be in violation of this chapter until the date of the next reporting period, specified in subdivision (d) of Section 25505, which occurs after the business becomes subject to subdivision (a), unless the administering agency requests the business to establish and implement the business plan at an earlier date.

25503.9. On or before January 1, 1995, the agency shall, in consultation with the administering agencies and the State Fire Marshal, adopt by regulation a single comprehensive addendum to the hazardous materials reporting form for businesses to submit to administering agencies for purposes of complying with subdivisions (b) and (c) of Section 13143.9 and subdivision (b) of Section 25509. The regulations shall also specify criteria for sharing data electronically. Not later than two years after the effective date of those regulations, and annually thereafter, each administering agency shall require businesses to use that addendum when complying with subdivisions (b) and (c) of Section 13143.9 and subdivision (b) of Section 25509. The addendum shall be filed with the administering agency, when required by the local fire chief.

25504. Business plans shall include all of the following:

(a) The inventory of information required by Section 25509 and whatever additional information that the administering agency finds is necessary to protect the health and safety of persons, property, or the environment. Any such information is, however, subject to trade secret protection pursuant to Section 25511.

(b) Emergency response plans and procedures in the event of a reportable release or threatened release of a hazardous material, including, but not limited to, all of the following:

(1) Immediate notification to the administering agency and to the appropriate local emergency rescue personnel.

(2) Procedures for the mitigation of a release or threatened release to minimize any potential harm or damage to persons, property, or the environment.

(3) Evacuation plans and procedures, including immediate notice, for the business site.

(c) Training for all new employees and annual training, including refresher courses, for all employees in safety procedures in the event of a release or threatened release of a hazardous material, including, but not limited to, familiarity with the plans and procedures specified in subdivision (b). These training programs may take into consideration the position of each employee.

(d) Any business required to file a pipeline operations contingency plan in accordance with the California Pipeline Safety Act of 1981 (Chapter 5.5 (commencing with Section 51010) of Part 3 of Division 1 of Title 5 of the Government Code) and the regulations of the Department of Transportation, found in Part 195 of Title 49 of the Code of Federal Regulations, may file a copy of those plans with the administering agency instead of filing an emergency response plan specified in subdivision (b).

(e) Any business operating a farm exempted by paragraph (5) of subdivision (b) of Section 25503.5 from filing the information specified in subdivisions (b) and (c), shall, notwithstanding this exemption, provide the training programs specified in subdivision (c).

25504.1. In accordance with Section 25503.5, a business that handles perchlorate material, as defined in subdivision (c) of Section 25210.5, shall prepare and submit to the administering agency a business plan pursuant to Section 25503.5 and an inventory form pursuant to Section 25509, both of which shall address perchlorate materials handled by that business.

25505. (a) (1) Except as provided in subdivision (e), each handler shall submit its business plan to the administering agency in accordance with the requirements of this article and certify that the business plan meets the requirements of this article.

(2) If, after review, the administering agency determines that the handler's business plan is deficient in any way, the administrative agency shall notify the handler of those deficiencies. The handler shall submit a corrected business plan within 30 days from the date of the notice.

(3) If a handler fails, after reasonable notice, to submit a business plan in compliance with this article, the administering agency shall immediately take appropriate action to enforce this article, including the imposition of civil and criminal penalties as specified in this article.

(b) In addition to the requirements of Section 25510, whenever a substantial change in the handler's operations occurs that requires a modification of its business plan, the handler shall submit a copy of the business plan revisions to the administering agency within 30 days from the date of the operational change.

(c) Each handler shall, in any case, review the business plan, submitted pursuant to subdivision (a) or (b) at least once every three years thereafter after the initial submission of the business plan, to determine if a revision is needed and shall certify to the administering agency that the review was made and that any necessary changes were made to the plan. A copy of those changes shall be submitted to the administering agency as a part of that certification.

(d) Unless exempted from the business plan requirements under this chapter, each handler shall annually report its hazardous materials inventory on the form required by subdivision (a) of Section 25503.3 or in the alternative form designated by the administering agency pursuant to subdivision (b) of Section 25503.3, or submit a certification statement to the administering agency of the county or city in which the handler is located.

(e) (1) Notwithstanding any other provision of this article, an administering agency may, with the written concurrence of the local fire chief, require a handler to submit only the inventory required by subdivision (a) of Section 25504, a list of emergency contacts, a site plan, and a certification that the handler has prepared a complete business plan that meets the requirements of this article, in lieu of the submission of a business plan, and require the handler to maintain the complete business plan at the site where the inventory is stored.

(2) If an administering agency requires a handler to submit only the inventory, the list of emergency contacts, the site plan, and the certification pursuant to paragraph (1), the administering agency shall review the remaining components of the business plan during its periodic inspections of the handler, and the handler shall annually submit a form, provided by the administering agency, that certifies

that the handler has included, and maintains as current, in the business plan, all other information required pursuant to Section 25504. Whenever there is a substantial change in a handler's operations that requires modification of its business plan, the handler shall submit a copy of those changes in accordance with subdivision (b).

(3) If an administering agency requires a handler to submit only the inventory, the list of emergency contacts, the site plan, and the certification pursuant to paragraph (1), the administering agency shall obtain from the handler the other components of the business plan that are not filed with the administering agency upon receipt of a request for public inspection of the business plan. The handler shall submit a complete copy of the business plan to the administering agency within five working days after the administering agency receives a request for public inspection and the administering agency shall make the business plan available to the member of the public requesting the inspection in accordance with the procedures specified in Section 25506. The administering agency shall not charge for a request to obtain this information or for an examination of the business plan during the administering agency's normal working hours.

(4) If, for any reason, a business plan maintained by a handler that is required to only submit the inventory, the list of emergency contacts, the site plan, and the certification pursuant to paragraph (1), is damaged or destroyed, the handler shall replace the business plan within 15 days of its damage or destruction, and shall notify the administering agency of the replacement.

25505.1. An administering agency may use the offices of the county agricultural commissioners to distribute business plan forms to farmers who are subject to Section 25505.

25505.2. (a) Notwithstanding any other provision of this chapter, any city or county which, on September 1, 1985, had in effect a local ordinance containing business inventory reporting requirements substantially similar to this chapter, as amended by the act enacting this section, is exempt from having to implement any regulations adopted by the agency concerning business plans upon meeting both of the following requirements:

(1) Not later than 90 days after the effective date of the act enacting this section, the city or county enacts an ordinance, or amends its existing ordinance, so that its requirements for business plans are the same as, or more restrictive than, this chapter, including subdivision (a) of Section 25503.5 and Sections 25504 and 25509.

(2) The agency certifies that the ordinance's requirements are in compliance with paragraph (1) and that the city or county is implementing the ordinance, based upon evidence submitted by the city or county. Applications for exemption shall be filed with the agency not later than 120 days from the effective date of the act enacting this section and the agency shall certify or reject the applications within 60 days after receipt. The city or county may file an appeal of the decision of the agency with the secretary of the agency, under procedures established by the agency.

(b) This section does not exempt any administering agency from compliance with any other provision of this chapter.

(c) Any business located in a city or county which is exempt from the regulations adopted pursuant to this chapter concerning business plans, shall comply with the ordinance adopted by the city or county.

25505.5. Notwithstanding any other provision of law, no public entity shall be held liable for any injury or damages resulting from an inadequate or negligent review of a business plan conducted pursuant to Section 25505.

25506. (a) The administering agency shall maintain records of all business plans received and shall index them by street address and company name. The business plan and revisions shall be available for public inspection during the regular working hours of the administering agency, except that those portions of the business plan specifying the precise location where hazardous materials are stored and handled onsite, including any maps of the site, as required by paragraph (5) of subdivision (a) of Section 25509, shall not be available for inspection. The administering agency shall transmit copies of the entire business plan or any information contained in the business plan to any requesting state or local agency.

(b) Any person who files an inventory form required under Section 25509 with the administering agency shall be deemed to have filed the inventory form required by subsection (a) of Section 11022 of Title 42 of the United States Code with the state emergency response commission and emergency planning committee established pursuant to Section 11001 of Title 42 of the United States Code.

(c) The administering agency shall, upon request, transmit the information collected pursuant to this chapter to the Chemical Emergency Planning and Response Commission, established by the Governor as the state emergency response commission pursuant to subsection (a) of Section 11001 of Title 42 of the United States Code, and to the local emergency planning committee established pursuant to subsection (c) of Section 11001 of Title 42 of the United States Code.

25507. (a) Except as provided in subdivision (b), the handler or any employee, authorized representative, agent, or designee of a handler shall, upon discovery, immediately report any release or threatened release of a hazardous material to the administering agency, and to the agency, in accordance with the regulations adopted pursuant to Section 25503. Each handler and any employee, authorized representative, agent, or designee of a handler shall provide all state, city, or county fire or public health or safety personnel and emergency rescue personnel with access to the handler's facilities.

(b) Subdivision (a) does not apply to any person engaged in the transportation of a hazardous material on a highway which is subject to, and in compliance with, the requirements of Sections 2453 and 23112.5 of the Vehicle Code.

25507.1. (a) Any business required to submit a followup emergency notice pursuant to subdivision (c) of Section 11004 of Title 42 of the United States Code, as that section read on January 1, 1989, or as it may be subsequently amended, shall submit the notice on a form approved by the agency.

(b) The agency may adopt guidelines for the use of the forms required by subdivision (a).

25507.2. In order to carry out the purposes of this chapter, an administering agency may train for, and respond to, the release, or threatened release, of a hazardous material.

25507.3. The California Environmental Protection Agency may request any business to submit the information required to be submitted in the toxic chemical release form specified in subsection (g) of Section 11023 of Title 42 of the United States Code, or a simplified version of that form, except that the form shall not be required of any retail business, any business which has fewer than 10 employees, or any business which manufactures, processes, or otherwise uses a toxic chemical in an amount less than the applicable threshold amount specified in subsection (f) of Section 11023 of Title 42 of the United States Code. The California Environmental Protection Agency shall use this information to collect adequate standardized quantitative data for use in multimedia applications, such as pollution prevention.

25507.10. The emergency rescue personnel, responding to the reported release or threatened release of an acutely hazardous material or to any fire or explosion involving a material that involves a release that would be required to be reported pursuant to Section 25507, shall immediately advise the superintendent of the school district having jurisdiction, where the location of the release or threatened release is within one-half mile of a school.

25508. (a) In order to carry out the purposes of this chapter, any employee or authorized representative of an administering agency has the authority specified in Section 25185, with respect to the premises of a handler, and in Section 25185.5, with respect to real property which is within 2,000 feet of the premises of a handler, except that this authority shall include inspections concerning hazardous material, in addition to hazardous waste.

(b) In addition to the requirements of Section 25537, the administering agency shall conduct inspections of every business subject to this article at least once every three years to determine if the business is in compliance with this article. However, the administering agency may designate the county agricultural commissioner to conduct the inspections of agricultural handlers. The administering agency or its designee for agricultural handlers shall give priority, when conducting these inspections, to inspecting facilities which store an amount of acutely hazardous materials, as defined in Section 25532, equal to, or greater than, the amount specified in subdivision (a) of Section 25536. In establishing a schedule for conducting inspections pursuant to this section, the administering agency may adopt and use an index of the volatility, toxicity, and quantity of acutely hazardous materials and hazardous materials. Administering agencies and designees shall attempt to schedule the inspections conducted pursuant to this section and Section 25537, when applicable, during the same time period.

25509. (a) The annual inventory form shall include, but shall not be limited to, information on all of the following which are handled in quantities equal to or greater than the quantities specified in subdivision (a) of Section 25503.5:

(1) A listing of the chemical name and common names of every hazardous substance or chemical product handled by the business.

(2) The category of waste, including the general chemical and mineral composition of the waste listed by probable maximum and minimum concentrations, of every hazardous waste handled by the business.

(3) A listing of the chemical name and common names of every other

hazardous material or mixture containing a hazardous material handled by the business which is not otherwise listed pursuant to paragraph (1) or (2).

(4) The maximum amount of each hazardous material or mixture containing a hazardous material disclosed in paragraphs (1), (2), and (3) which is handled at any one time by the business over the course of the year.

(5) Sufficient information on how and where the hazardous materials disclosed in paragraphs (1), (2), and (3) are handled by the business to allow fire, safety, health, and other appropriate personnel to prepare adequate emergency responses to potential releases of the hazardous materials.

(6) The SIC Code number of the business if applicable.

(7) The name and telephone number of the person representing the business and able to assist emergency personnel in the event of an emergency involving the business during nonbusiness hours.

(b) If the local fire chief requires the business to comply with the requirements of subdivision (c) of Section 80.103 of the Uniform Fire Code, as adopted by the State Fire Marshal pursuant to Section 13143.9, the business shall also file the addendum required by Section 25503.9 with the administering agency.

(c) The administering agency may permit the reporting of the amount of hazardous material under this section by ranges, rather than a specific amount, as long as those ranges provide the information necessary to meet the needs of emergency rescue personnel, to determine the potential hazard from a release of the materials, and meets the purposes of this chapter.

(d) (1) Except as provided in subdivision (e), the annual inventory form required by this section shall also include all inventory information required by Section 11022 of Title 42 of the United States Code, as that section read on January 1, 1989, or as it may be subsequently amended.

(2) The agency may adopt or amend existing regulations specifying the inventory information required by this subdivision.

(e) If, pursuant to federal law or regulation, as it currently exists or as it may be amended, there is a determination that the inventory information required by subdivisions (a) and (c) is substantially equivalent to the inventory information required under the Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. Sec. 11001 et seq.), the requirements of subdivision (d) shall not apply.

25509.1. Notwithstanding subdivision (a) of Section 25509, an administering agency may collect any or all of the information required to be reported in an inventory form from another public agency, under all of the following conditions:

(a) The information collected is the same information required under subdivision (a) of Section 25509.

(b) The administering agency receives this information not later than would otherwise be required under this chapter.

(c) The information was originally provided by the handler to the public agency pursuant to a statutory requirement.

25509.2. (a) The Legislature hereby finds and declares all of the following:

(1) Persons attempting to do business in this state are increasingly experiencing excessive and duplicative regulatory requirements at different levels of government.

(2) To streamline and ease the regulatory burdens of doing business in this state, compliance with the hazardous materials release response plans and inventory requirements of this chapter

shall also suffice to meet the requirements of the Uniform Fire Code with regard to the requirement for a hazardous materials management plan and hazardous materials inventory statement, as set forth in Article 80 of the Uniform Fire Code and its appendices.

(3) Businesses which are required to comply with this chapter do so on one form, with one fee and one inspection. The administering agency shall forward the data collected, within 15 days of receipt and confirmation, with other local agencies in a format easily interpreted by those agencies with shared responsibilities for protection of the public health and safety and the environment.

(4) Enforcement of this chapter and the Uniform Fire Code shall be coordinated.

(b) Notwithstanding Section 13143.9, and any standards and regulations adopted pursuant to that section, any business which files the annual inventory form in compliance with this article, including the addendum adopted pursuant to Section 25503.9, as required by the local fire chief to comply with subdivision (c) of Section 80.103 of the Uniform Fire Code, as adopted by the State Fire Marshal pursuant to Section 13143.9, shall be deemed to have met the requirements of subdivision (c) of Section 80.103 of the Uniform Fire Code, as adopted by the State Fire Marshal pursuant to Section 13143.9.

(c) Notwithstanding Section 13143.9, and any standards and regulations adopted pursuant to that section, any business which establishes and maintains a business plan for emergency response to a release or a threatened release of a hazardous material in accordance with Section 25503.5, shall be deemed to have met the requirements of subdivision (b) of Section 80.103 of the Uniform Fire Code, as adopted by the State Fire Marshal pursuant to Section 13143.9.

(d) Except for the addendum required by the local fire chief, the administering agency shall be the sole enforcement agency for purposes of determining compliance pursuant to subdivisions (b) and (c).

(e) Except as otherwise expressly provided in this section, this section does not affect or otherwise limit the authority of the local fire chief to enforce the Uniform Fire Code.

25509.3. The annual inventory required by Section 25509 shall also include the total estimated amounts of each hazardous waste handled by the business throughout the course of the year.

25510. Within 30 days of any one of the following events, any business subject to Section 25505 shall submit an amendment to the inventory form detailing the handling, and the following appropriate information:

(1) A 100 percent or more increase in the quantity of a previously disclosed material.

(2) Any handling of a previously undisclosed hazardous material subject to the inventory requirements of this chapter.

(3) Change of business address.

(4) Change of business ownership.

(5) Change of business name.

25511. (a) If a business believes that the inventory required by this chapter involves the release of a trade secret, the business shall nevertheless make the disclosure to the administering agency, and shall notify the administering agency in writing of that belief on the inventory form. As used in this chapter "trade secret" has the

meanings given to it by Section 6254.7 of the Government Code and Section 1060 of the Evidence Code.

(b) Subject to this section, the administering agency shall protect from disclosure any trade secret designated as such by the handler.

(c) Upon receipt of a request for the release of information to the public which includes information which the handler has notified the administering agency is a trade secret pursuant to subdivision (a), the administering agency shall notify the handler in writing of the request by certified mail, return receipt requested. The administering agency shall release the information to the public, but not earlier than 30 days after the date of mailing the notice of the request for information, unless, prior to the expiration of the 30-day period, the handler files an action in an appropriate court for a declaratory judgment that the information is subject to protection under subdivision (b) or for an injunction prohibiting disclosure of the information to the public and promptly notifies the administering agency of that action. This section does not permit a handler to refuse to disclose the information required pursuant to this chapter to the administering agency.

(d) Any information which is confidential pursuant to this section shall not be disclosed to anyone except the following:

(1) An officer or employee of the county or city, the state, or the United States, in connection with the official duties of that officer or employee under any law for the protection of health, or to contractors with the county or city and their employees if, in the opinion of the administering agency, disclosure is necessary and required for the satisfactory performance of a contract, for performance of work, or to protect the health and safety of the employees of the contractor.

(2) Any physician where the physician certifies in writing to the administering agency that the information is necessary to the medical treatment of the physician's patient.

(e) For purposes of this section, fire and emergency rescue personnel and county health personnel operating within the jurisdiction of the county or city shall be considered employees of the county or city, as the case may be.

(f) Any physician who, by virtue of having obtained possession of, or access to, confidential information, and who, knowing that disclosure of the information to the general public is prohibited by this section, knowingly and willfully discloses the information in any manner to any person not entitled to receive it, is guilty of a misdemeanor.

(g) Any officer or employee of the county or city or former officer or employee who, by virtue of that employment or official position, has possession of, or has access to, confidential information, and who, knowing that disclosure of the information to the general public is prohibited by this section, knowingly and willfully discloses the information in any manner to any person not entitled to receive it, is guilty of a misdemeanor. Any contractor with the county or city and any employee of the contractor, who has been furnished information as authorized by this section, shall be considered an employee of the county or city for purposes of this section.

(h) Information certified by appropriate officials of the United States as necessary to be kept secret for national defense purposes shall be accorded the full protections against disclosure as specified by those officials or in accordance with the laws of the United States.

25512. (a) The submission of any information required under this chapter does not affect any other liability or responsibility of a business with regard to safeguarding the health and safety of an

employee or any other person.

(b) Compliance with this chapter shall not be deemed to be compliance with the duty of care required of any business for purposes of any judicial or administrative proceeding conducted pursuant to any other provision of law.

25513. Each administering county or city may, upon a majority vote of the governing body, adopt a schedule of fees to be collected from each business required to submit a business plan pursuant to this article which is within its jurisdiction. The governing body may provide for the waiver of fees when a business, as defined in Section 25501.4, submits a business plan. The fee shall be set in an amount sufficient to pay only those costs incurred by the county, city, or fire district, in carrying out this article. In determining the fee schedule, the administering agency shall consider the volume and degree of hazard potential of the hazardous materials handled by the businesses subject to this article.

25513.1. (a) On or before January 1, 1987, the board of supervisors of a county may, by resolution, apply to the Controller for a loan to pay for the costs necessary to initially implement this chapter.

(b) Each county may apply for one loan in an amount not to exceed seventy-five thousand dollars (\$75,000).

(c) The Controller shall develop procedures for the submission of resolutions pursuant to this section.

(d) A county shall repay the loan within 15 months from the day the loan is made by the Controller, or on April 1, 1988, whichever comes first. The loan shall be repaid with interest charged at the rate of interest earned by the Pooled Money Investment Account on the date when the loan is made.

(e) There is hereby appropriated from the General Fund to the Controller, the funds necessary to make the loans pursuant to this section.

(f) If a county does not repay the loan and interest thereon within the time required by subdivision (d), the Controller shall withhold the amount which is unpaid from any state payments which are due to the county.

25514. (a) Any business that violates Sections 25503.5 to 25505, inclusive, or Sections 25508 to 25510, inclusive, shall be civilly liable to the administering county or city in an amount of not more than two thousand dollars (\$2,000) for each day in which the violation occurs. If the violation results in, or significantly contributes to, an emergency, including a fire, the business shall also be assessed the full cost of the county or city emergency response, as well as the cost of cleaning up and disposing of the hazardous materials.

(b) Any business that knowingly violates Sections 25503.5 to 25505, inclusive, or Sections 25508 to 25510, inclusive, after reasonable notice of the violation shall be civilly liable to the administering county or city in an amount not to exceed five thousand dollars (\$5,000) for each day in which the violation occurs.

25514.3. Any person that knowingly violates Section 25503.5, 25503.7, 25503.8, 25505, 25508, 25509, 25509.3, 25510, or 25533 after reasonable notice of the violation, is, upon conviction, guilty of a misdemeanor. This section does not preempt any other applicable criminal or civil penalties.

25514.5. (a) Notwithstanding Section 25514, any business that violates this article is liable to an administering agency for an administrative penalty not greater than two thousand dollars (\$2,000) for each day in which the violation occurs. If the violation results in, or significantly contributes to, an emergency, including a fire or health or medical problem requiring toxicological, health, or medical consultation, the business shall also be assessed the full cost of the county, city, fire district, local EMS agency designated pursuant to Section 1797.200, or poison control center as defined by Section 1797.97, emergency response, as well as the cost of cleaning up and disposing of the hazardous materials, or acutely hazardous materials.

(b) Notwithstanding Section 25514, any business that knowingly violates this article after reasonable notice of the violation is liable for an administrative penalty, not greater than five thousand dollars (\$5,000) for each day in which the violation occurs.

(c) When an administering agency issues an enforcement order or assesses an administrative penalty, or both, for a violation of this article, the administering agency shall utilize the administrative enforcement procedures, including the hearing procedures, specified in Sections 25404.1.1 and 25404.1.2.

25515. (a) A person or business who violates Section 25507 shall, upon conviction, be punished by a fine of not more than twenty-five thousand dollars (\$25,000) for each day of violation, by imprisonment in the county jail for not more than one year, or by both the fine and imprisonment. If the conviction is for a violation committed after a first conviction under this section, the person shall be punished by a fine of not less than two thousand dollars (\$2,000) or more than fifty thousand dollars (\$50,000) per day of violation, by imprisonment in the state prison for 16, 20, or 24 months or in the county jail for not more than one year, or by both the fine and imprisonment. Furthermore, if the violation results in, or significantly contributes to, an emergency, including a fire, to which the county or city is required to respond, the person shall also be assessed the full cost of the county or city emergency response, as well as the cost of cleaning up and disposing of the hazardous materials.

(b) Notwithstanding subdivision (a), a person who knowingly fails to report, pursuant to Section 25507, an oil spill occurring in waters of the state, other than marine waters, shall, upon conviction, be punished by a fine of not more than fifty thousand dollars (\$50,000), by imprisonment in the county jail for not more than one year, or by both that fine and imprisonment.

(c) Notwithstanding subdivision (a), a person who knowingly makes a false or misleading report on an oil spill occurring in waters of the state, other than marine waters, shall, upon conviction, be punished by a fine of not more than fifty thousand dollars (\$50,000), by imprisonment in the county jail for not more than one year, or by both that fine and imprisonment.

(d) This section does not preclude prosecution or sentencing under other provisions of law.

25515. (a) A person or business who violates Section 25507 shall, upon conviction, be punished by a fine of not more than twenty-five thousand dollars (\$25,000) for each day of violation, by imprisonment in a county jail for not more than one year, or by both the fine and imprisonment. If the conviction is for a violation committed after a

first conviction under this section, the person shall be punished by a fine of not less than two thousand dollars (\$2,000) or more than fifty thousand dollars (\$50,000) per day of violation, by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code for 16, 20, or 24 months or in a county jail for not more than one year, or by both the fine and imprisonment. Furthermore, if the violation results in, or significantly contributes to, an emergency, including a fire, to which the county or city is required to respond, the person shall also be assessed the full cost of the county or city emergency response, as well as the cost of cleaning up and disposing of the hazardous materials.

(b) Notwithstanding subdivision (a), a person who knowingly fails to report, pursuant to Section 25507, an oil spill occurring in waters of the state, other than marine waters, shall, upon conviction, be punished by a fine of not more than fifty thousand dollars (\$50,000), by imprisonment in the county jail for not more than one year, or by both that fine and imprisonment.

(c) Notwithstanding subdivision (a), a person who knowingly makes a false or misleading report on an oil spill occurring in waters of the state, other than marine waters, shall, upon conviction, be punished by a fine of not more than fifty thousand dollars (\$50,000), by imprisonment in the county jail for not more than one year, or by both that fine and imprisonment.

(d) This section does not preclude prosecution or sentencing under other provisions of law.

25515.1. Any person who willfully prevents, interferes with, or attempts to impede the enforcement of this chapter by any authorized representative of an administering agency is, upon conviction, guilty of a misdemeanor.

25515.2. (a) All criminal penalties collected pursuant to this chapter shall be apportioned in the following manner:

(1) Fifty percent shall be paid to the office of the city attorney, district attorney, or Attorney General, whichever office brought the action.

(2) Fifty percent shall be paid to the agency which is responsible for the investigation of the action.

(b) All civil penalties collected pursuant to this chapter shall be apportioned in the following manner:

(1) Fifty percent shall be paid to the office of the city attorney, district attorney, or Attorney General, whichever office brought the action.

(2) Fifty percent shall be paid to the agency responsible for the investigation of the action.

(c) If a reward is paid to a person pursuant to Section 25517, the amount of the reward shall be deducted from the amount of the criminal or civil penalty before the amount is apportioned pursuant to subdivisions (a) and (b).

25516. When the administering agency determines that a business has engaged in, is engaged in, or is about to engage in any acts or practices which constitute or will constitute a violation of this chapter or any regulation or order promulgated thereunder, and when requested by the administering agency, the city attorney of the city or the district attorney of the county in which those acts or practices have occurred, are occurring, or will occur shall make application to the superior court for an order enjoining the acts or practices or for an order directing compliance, and, upon a showing that the person or business has engaged in, is engaged in, or is about to engage in the acts or practices, a permanent or temporary

injunction, restraining order, or other appropriate order may be granted. This section does not prohibit a city attorney or district attorney from seeking the same relief upon the city attorney's or district attorney's own motion.

25516.1. Every civil action brought under this chapter shall be brought by the city attorney, district attorney, or Attorney General in the name of the people of the State of California, and any actions relating to the same violation may be joined or consolidated.

25516.2. (a) In any civil action brought pursuant to this chapter in which a temporary restraining order, preliminary injunction, or permanent injunction is sought, it is not necessary to allege or prove at any stage of the proceeding any of the following:

(1) Irreparable damage will occur should the temporary restraining order, preliminary injunction, or permanent injunction not be issued.

(2) The remedy at law is inadequate.

(b) The court shall issue a temporary restraining order, preliminary injunction, or permanent injunction in a civil action brought pursuant to this chapter without the allegations and without the proof specified in subdivision (a).

25517. (a) Any person who provides information which materially contributes to the imposition of a civil penalty, whether by settlement or court order, under Section 25514, as determined by the city attorney, district attorney, or the Attorney General filing the action, shall be paid a reward by the administering agency or the state equal to 10 percent of the amount of the civil penalty collected. The reward shall be paid from the amount of the civil penalty collected. No reward paid pursuant to this subdivision shall exceed five thousand dollars (\$5,000).

(b) Any person who provides information which materially contributes to the conviction of a person or business under Section 25515, as determined by the city attorney, district attorney, or the Attorney General filing the action, shall be paid a reward by the administering agency or the state equal to 10 percent of the amount of the fine collected. The reward shall be paid from the amount of the fine collected. No reward paid pursuant to this subdivision shall exceed five thousand dollars (\$5,000).

(c) No informant shall be eligible for a reward for a violation known to the administering agency, unless the information materially contributes to the imposition of criminal or civil penalties for a violation specified in this section.

(d) If there is more than one informant for a single violation, the person making the first notification received by the office which brought the action shall be eligible for the reward, except that, if the notifications are postmarked on the same day or telephoned notifications are received on the same day, the reward shall be divided equally among those informants.

(e) Public officers and employees of the United States, the State of California, or counties and cities in this state are not eligible for the reward pursuant to subdivision (a) or (b), unless the providing of the information does not relate in any manner to their responsibilities as public officers or employees.

(f) An informant who is an employee of a business and who provides information that the business has violated this chapter is not eligible for a reward if the employee intentionally or negligently caused the violation or if the employee's primary and regular

responsibilities included investigating the violation, unless the business knowingly caused the violation.

(g) The administering agency or the state shall pay rewards under this section pursuant to the following procedures:

(1) An application shall be signed by the informant and presented to the administering agency or the state within 60 days after a final judgment has been entered or the period for an appeal of a judgment has expired.

(2) The determination by the district attorney or city attorney or Attorney General as to whether the information provided by the applicant materially contributed to the imposition of a judgment under Sections 25514 or 25515 shall be final.

(3) The administering agency or the state shall notify the applicant in writing of its decision to grant or deny a reward within a reasonable time period following the filing of an application.

(4) Approved reward claims shall be paid by the administering agency or the state within 30 days of the collection and deposit of the penalties specified in subdivisions (a) and (b).

(h) The names of reward applicants or informants shall not be disclosed by the administering agency or the state unless the names are otherwise publicly disclosed as part of a judicial proceeding.

(i) Notwithstanding any other provision of this section, rewards paid by the state shall only be paid after appropriation by the Legislature.

25517.5. (a) The agency may develop materials, such as guidelines and informational pamphlets, to assist businesses to fulfill their obligations under this chapter.

(b) The agency may adopt emergency regulations for the purpose of implementing Sections 25503 and 25509. These emergency regulations shall be adopted by the agency in accordance with Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code, and for purposes of that chapter, the adoption of these regulations is an emergency and shall be considered by the Office of Administrative Law as necessary for the immediate preservation of the public peace, health, and safety, or general welfare.

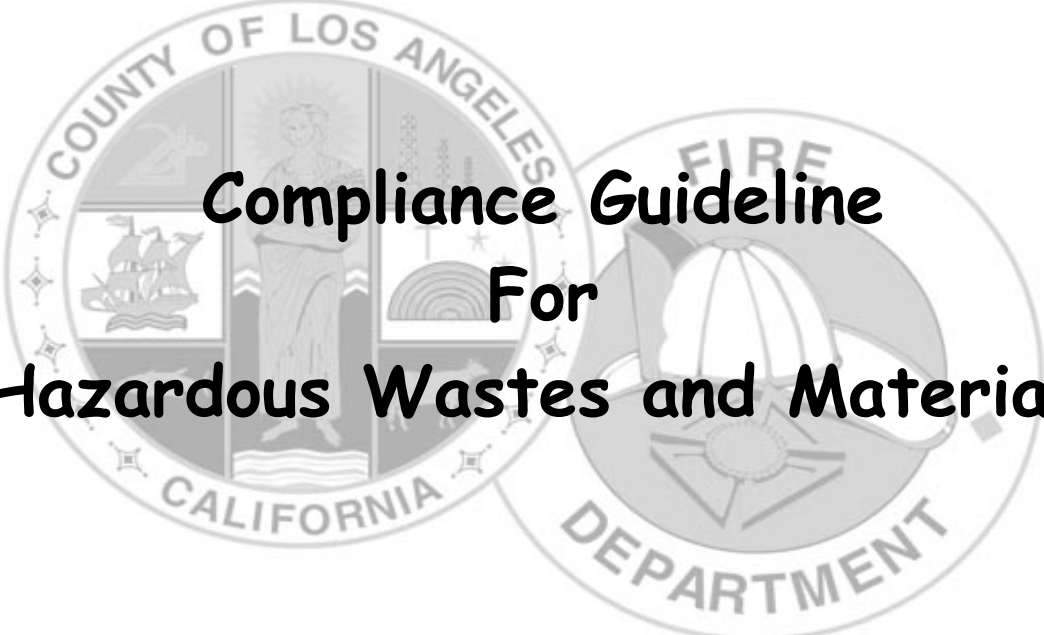
25518. This chapter shall be construed liberally so as to accomplish the intent of the Legislature in protecting the public health and safety and the environment.

25519. If any provision of this chapter or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of the chapter which can be given effect without the invalid provision or application, and to that end the provisions of this chapter are severable.

25520. The agency, not later than January 10, 1986, shall adopt emergency regulations for the immediate report of release or threatened release of a hazardous material as required by Section 25507 until regulations are adopted pursuant to Section 25503. Regulations adopted pursuant to this section are not subject to review by the Office of Administrative Law.

**2. Compliance Guide – Los Angeles County Fire
Department – Health HazMat**

County of Los Angeles
Fire Department
Health Hazardous Materials Division



**Compliance Guideline
For
Hazardous Wastes and Materials**



County of Los Angeles Fire Department
Prevention Bureau
Health Hazardous Materials Division
5825 Rickenbacker Road
Commerce, CA 90040
Chief—William Jones

Revised 12/3/09

ACKNOWLEDGEMENTS

Compliance Guideline for Hazardous Wastes and Materials is a publication created by the Health Hazardous Materials Division (HHMD) of the Los Angeles County Fire Department. Its purpose is to assist the Industry and the general public in understanding hazardous wastes and hazardous materials, and to assist the reader in complying with the law.

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HHMD and DPW staff hopes that you find this booklet a useful tool in navigating the world of Hazardous Materials and Hazardous Wastes.

This document is intended to provide regulatory guidance only. This does not replace or supersede relevant statutes and regulations. The information contained in this guidance document is based upon the statutes and regulations in effect as of the revision date. Interested parties are advised to keep apprised of subsequent changes to relevant statutes and regulations.

If you have any questions or require any additional information, please contact one of our Hazardous Materials Specialists at (323) 890-4045.

This booklet provides guidelines for compliance with regulations for the following programs:

- Hazardous Waste Generator Program (including onsite treatment under tiered permitting)
- Aboveground Petroleum Storage Tank Program
- Underground Storage Tank (UST) Program
- Hazardous Material Release Response Plans and Inventory Program
- California Accidental Release Prevention (CalARP) Program
- Uniform Fire Code Hazardous Material Management Plans and Inventories Program

The agency responsible for administering the majority of the content of this booklet within Los Angeles County is the Los Angeles County Fire Department as the Los Angeles County Certified Unified Program Agency (CUPA).

The Los Angeles County CUPA has jurisdiction in all unincorporated and incorporated areas of Los Angeles County, with the exception of the following cities, where the City's Fire Department is the CUPA:

- El Segundo
- Glendale
- Los Angeles
- Long Beach
- Santa Fe Springs
- Santa Monica and
- Vernon.

These cities administer all of the above programs with the exception of Los Angeles and Santa Monica, where the Los Angeles County CUPA administers only the Hazardous Waste Generator Program for them. See Appendix A for contact information for these cities.

Within the Los Angeles County CUPA's jurisdiction, one or more of the above programs are administered by Participating Agencies (PAs): the County of Los Angeles Department of Public Works, Environmental Programs Division; the County of Los Angeles Agricultural Commissioner/Weights & Measures; and the City Fire Departments of Alhambra, Burbank, Compton, Culver City, Downey, Monrovia, Pasadena, Redondo Beach, South Pasadena, and Torrance. See Appendix B for programs administered and contact information for these agencies.

The City of Signal Hills that used to be under the Long Beach CUPA has contracted with the Los Angeles County CUPA for the administration of their Hazardous Waste and Hazardous Materials programs.

The Los Angeles County CUPA is a PA for the Orange County CUPA for the administration of the Hazardous Materials programs in the City of La Habra.

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CHAPTER 1

HAZARDOUS WASTE GENERATOR PROGRAM TIERED PERMITTING

HAZARDOUS WASTE GENERATOR PROGRAM

What is a Hazardous Waste?

Hazardous waste is broadly defined as a waste or combination of wastes, which because of its quantity, concentration, or physical or chemical characteristics may either:

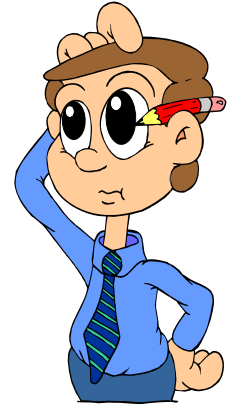
- 1) Cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness; or
- 2) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

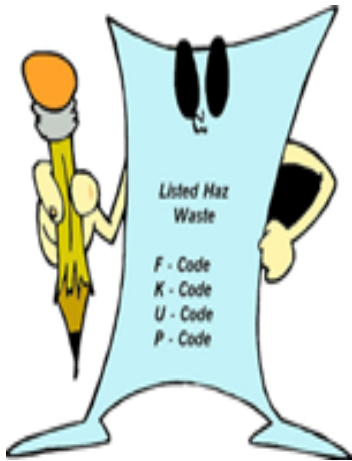
Hazardous waste can be a solid, semi-solid, liquid or a contained gaseous substance that may have one or more of the following properties:

- Ignitability
- Toxicity
- Reactivity
- Corrosivity
- Persistence or Bioaccumulation
- Carcinogenicity

In California, hazardous waste is classified as either RCRA or non-RCRA. "RCRA" is the acronym for the Resource Conservation and Recovery Act, which was enacted in 1976 to address the huge volumes of municipal and industrial solid wastes generated nationwide. It is important to differentiate between RCRA and non-RCRA waste because the appropriate code numbers must be assigned and used for various legal purposes such as filling out transportation papers (manifests), disposal fees, and treatment determinations.

RCRA wastes are federally regulated and non-RCRA wastes are those determined by the State to be hazardous—even though the federal government has not. California has adopted RCRA hazardous wastes from the United States Environmental Protection Agency (USEPA)'s RCRA program [Title 22 of the California Code of Regulations (22 CCR), §66261.100]. Thus, California's hazardous waste universe is larger than the federal's. This is an example of state regulations being more stringent than the federal regulations.





The RCRA hazardous waste category is divided into two groups:

- Listed hazardous wastes (F, K, P, and U waste codes); and
- Characteristics hazardous waste (D waste codes).

Listed Hazardous Wastes

Listed hazardous wastes include wastes from generic industrial processes, wastes from certain sectors of industry, and unused pure chemical products and formulations. Any waste fitting this description may be considered a listed hazardous waste. These listed wastes are specified in 22 CCR §§66261.31-66261.33. These hazardous waste listings consist of four lists:

F Code Wastes: Multiple-use or non-specific source wastes (e.g., spent solvents).

K Code wastes: Industry-specific source wastes (e.g., wastewater sludge from the production of creosote).

U Code wastes: Discarded commercial chemical products (e.g., acetone).

P Code wastes: Acutely hazardous commercial chemical products and off-specification commercial products (e.g., pesticides).

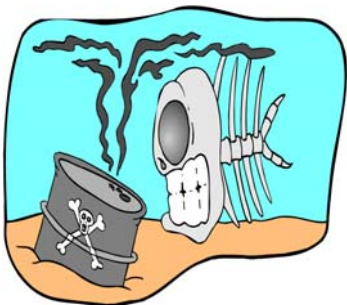
A listed waste or any waste mixed with a listed waste is a RCRA hazardous waste.

Characteristic Hazardous Wastes

Characteristic hazardous wastes are wastes that exhibit certain measurable and/or observable properties and are designated as D code wastes. Four characteristics are used to determine whether a waste is hazardous (22 CCR §§66261.21-66.261.24):

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

These four hazardous waste characteristics are defined below:



Ignitability (22 CCR §66261.21): Ignitable wastes can readily catch fire and sustain combustion. Many paints, cleaners, and other liquid industrial wastes pose such a hazard. A waste is ignitable if the following apply:

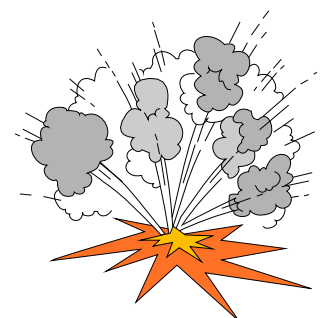
- Has a flash point less than 140 degrees F,
- Is readily ignitable, or
- Is an oxidizer (as defined in the Title 49 of the Code of Federal Regulations (49 CFR))

A non-liquid waste is considered ignitable if it can spontaneously catch fire or catch fire through friction or absorption of moisture under normal handling conditions and can burn so vigorously that it creates a hazard. Examples of non-liquid wastes that might be ignitable are metal or mineral dusts (e.g., aluminum, magnesium, or phosphorus). Ignitable wastes have the waste code D001 and are among the most common hazardous wastes.

Corrosivity (22 CCR §66261.22): Corrosive wastes are acidic (low pH) or basic (high pH). Such wastes can readily corrode or dissolve flesh, metal, or other materials. Liquid wastes or non-liquid wastes (when mixed with water) exhibit the characteristic for corrosivity, if they have a pH less than or equal to 2 ($\text{pH} \leq 2$) or greater than or equal to 12.5 ($\text{pH} \geq 12.5$). If a liquid waste corrodes steel at a rate greater than 0.25 inches per year, the waste is corrosive and is thus hazardous. Examples of corrosive wastes are caustic hot tank liquid wastes and metal finishing process tank wastes. Corrosive wastes have the waste code D002.

Reactivity (22 CCR §66261.23): Reactive wastes readily explode or undergo violent reactions. Reactive waste can exhibit one or more of the following properties:

- Are normally unstable and readily undergo violent change without detonating,
- React violently with water,
- Generate toxic gases when mixed with water,
- Are cyanide or sulfur bearing wastes which, when exposed to pH conditions between 2 and 12.5, can generate toxic gas,
- Are capable of detonation or explosion if heated or placed under confinement,
- Are readily capable of detonation, explosive decomposition, or reaction at standard temperature and pressure,
- Are forbidden explosives (49 CFR §173.51), Class A explosives (49 CFR §173.51), or Class B explosives (49 CFR §173.88).





Examples of reactive wastes are picric acid, sodium metal, and cyanide. Wastes exhibiting the characteristics of reactivity have the waste code D003.

Toxicity: A waste which exhibits the characteristic of toxicity has a potential to harm humans when eaten, inhaled or touched. Toxic waste can also negatively affect the environment. Most people associate toxic waste with poisons. However, the criterion for toxic waste determination and classification is complex and confusing to most people.

To determine if a waste is toxic, toxicologists conduct test to evaluate:

- Whether the waste can build up in an organism's body until it reaches a concentration that causes a disease or a disorder.
- Whether the waste can leach through a municipal solid waste landfill and potentially contaminate groundwater.
- Whether a specific concentration of the waste will kill one-half of the laboratory animals exposed to it. Laboratory animals obviously are used in lieu of testing the substance directly on humans. These results are then extrapolated to human exposures.



Toxicity Criterion

There are various aspects to the toxic waste criterion.

There is also a difference in how the federal and state regulations address the toxicity characteristic of wastes. The federal regulations are concerned with known toxic constituents that may potentially leach from landfill wastes and impact groundwater, thus potentially affecting human health and the environment. State regulations have the same emphasis, but the state also sets forth criteria for testing of toxic waste that are not solely dependent on discrete toxic constituents. Rather, the toxic effect of the waste as a "whole" is evaluated.

Federal Toxicity Characteristic: When waste is disposed of in a municipal solid waste landfill, toxic constituents can potentially

leach from the waste and affect groundwater, thus potentially exposing users of the water to the toxic constituents. In order to predict whether any particular waste is likely to leach toxic chemicals into the groundwater at “harmful” concentrations, the USEPA designed a lab procedure to replicate the leaching process and other conditions that occur when wastes are buried in a typical municipal landfill. This lab procedure is known as the Toxicity Characteristic Leaching Procedure (TCLP). By applying the TCLP to a hazardous waste sample, a leachate is created that is similar to the leachate generated by a landfill containing a mixture of household and industrial wastes.

When a leachate is created from a generator’s hazardous waste sample by the TCLP, it is then tested for concentrations of certain hazardous chemicals.

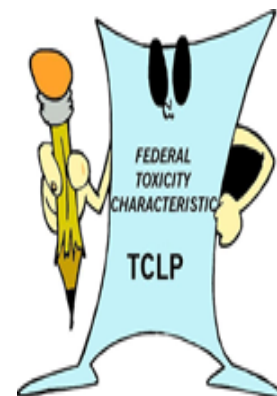
The USEPA has specified regulatory levels (concentrations) for 40 toxic chemicals. These regulatory levels are based on groundwater modeling studies and toxicity data that calculate the limit above which these common toxic compounds and elements will threaten human health and the environment.

If a leachate sample from a generator’s hazardous waste contains a concentration that is equal to or above, the federal regulatory limit for one of the specified chemicals, the waste exhibits the federal toxicity characteristic and therefore is a RCRA hazardous waste.

The federal regulations describing the toxicity characteristic and listing the 40 chemicals and their associated regulatory levels (concentrations) are in Title 40 of the Code of Federal Regulations (40 CFR) §261.24. These same regulations have also been adopted by California in 22 CCR §66261.24(a)(1).

Persistent and Bioaccumulative Toxic Substances: Similar to the federal toxicity characteristic, the state has identified an additional 20 inorganic constituents and 18 organic constituents as persistent and bioaccumulative toxic substances [22 CCR §66261.24(a)(2)]. The state leachate extraction procedure is different than the federal method, and the state toxic constituents are evaluated on their total concentrations and/or soluble concentrations.

Every persistent and bioaccumulative toxic substance is assigned a *Total Threshold Limit Concentration (TTLC)* value and a *Soluble Threshold Limit Concentration (STLC)* value. *If a sample from a generator’s hazardous waste has a total concentration that equals or exceeds the assigned TTLC or STLC value for one of the specified chemicals, the waste is a persistent and bioaccumulative*



toxic substance and is, at a minimum, a non-RCRA hazardous waste.

Depending on the type and concentration of the toxic constituent(s), a waste can be characterized as both a RCRA and non-RCRA hazardous waste for the characteristic of toxicity.

Acute Toxicity: Acute toxicity is the dose or concentration of a substance or mixture of substances (e.g., waste) that, when administered (exposure testing) to a test population (e.g., laboratory rats) for a pre-determined duration of time, produces a percentage of population death.

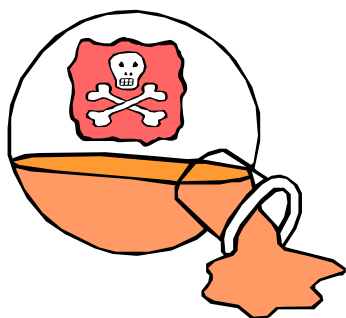


The state regulations specify four acute toxicity criteria:

- Oral Toxicity [22 CCR §66261.24(a)(3)]
- Dermal Toxicity [22 CCR §66261.24(a)(4)]
- Inhalation Toxicity [22 CCR §66261.24(a)(5)]
- Acute Aquatic Toxicity [22 CCR §66261.24(a)(6)]

These four acute toxicity criteria are defined as follows:

- *Acute Oral Lethal Dose (LD₅₀)* is the dose of a substance or mixture of substances, in milligrams per kilogram of test animal body weight, which, when administered orally as a single dose, produces death within 14 days in half of a group of 10 or more laboratory white rats. According to state law, *waste is hazardous* if the oral LD₅₀ < 2,500 mg/kg [Health and Safety Code (HSC) §25141.5].
- *Acute Dermal LD₅₀* is the dose of a substance or mixture of substances, in milligrams per kilogram of test animal body weight, which, when applied continuously to the bare skin for 24 hours, produces death within 14 days in half of a group of 10 or more rabbits. *Waste is hazardous* if the dermal LD₅₀ < 4,300 mg/kg.
- *Acute Inhalation LC₅₀* is the concentration of a substance or waste that produces death in half the group of test animals within 14 days. *Waste is hazardous* if the inhalation LC₅₀ < 10,000 parts per million (ppm).



- *Aquatic Toxicity LC₅₀* (a.k.a. Fish Bioassay) is the concentration of a substance or mixture of substances in water, which produces death within 96 hours in half of a group of flathead minnows, rainbow trout or golden shiners. *Waste is hazardous* if the aquatic exposure LC₅₀ < 500 mg/liter.

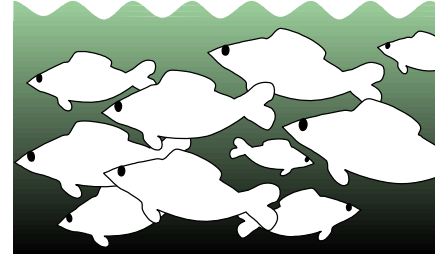
Carcinogenicity [22 CCR 66261.24(a)(7)]: Waste is defined as toxic if it contains constituents that are known carcinogens (i.e., cause cancer). The state regulations list 16 carcinogenic substances. Waste is defined as hazardous if any of the listed carcinogens are present at a single or combined concentration equal to or exceeding 0.001 percent by weight (10 ppm).

Acutely and Extremely Hazardous Waste: Acutely and extremely hazardous wastes are more hazardous than ordinary hazardous wastes by orders of magnitude.

Acutely Hazardous Wastes are defined federal listed waste (i.e., P listed waste [in Article 4 of Chapter 11 of 22 CCR]).

Extremely Hazardous Wastes are wastes that met the one of the following criteria [22 CCR §§66261.110 and 66261.113]:

- *Acute Oral Toxicity:* LD₅₀ < 50 mg/kg.
- *Acute Dermal Toxicity:* LD₅₀ < 43 mg/kg.
- *Acute Inhalation Toxicity:* LC₅₀ ≤ 100 ppm.
- *Carcinogenicity:* Same list of 16 carcinogenic substances as described above at a single or combined concentration equal to or exceeding 0.1 percent by weight.
- *Water Reactive* [22 CCR §66261.110]: When contacted by water, reacts violently, generating extreme heat, burning, exploding, or rapid reaction.
- *Persistent and Bioaccumulative Toxic Substances* [22 CCR §66261.113]: Wastes that have total concentrations of persistent and bioaccumulative toxic substances that exceed the extremely hazardous waste TTLC values. The list of chemicals and their associated TTLCs differ from the hazardous waste list and TTLCs described above.



Who qualifies as a Hazardous Waste Generator?

Generator Defined



A hazardous waste generator is a person, including a business, that produces or generates a hazardous waste or whose act first causes a hazardous waste to become subject to regulations (22 CCR §66260.10).

Hazardous waste generators are subject to specific requirements of the hazardous waste law and regulations, which are found in HSC, Div. 20, Chp. 6.5 and 22 CCR, Div. 4.5, Chp. 12, respectively. All generators within the jurisdiction of the HHMD are also subject to the requirements in Title 12 of the Los Angeles County Code. These requirements specify that it is the responsibility of the generator to:

- Make a hazardous waste determination.
- Obtain an EPA (Environmental Protection Agency) ID number.
- Manage hazardous wastes in compliance with laws and regulations.
- Maintain thorough and accurate records and report hazardous waste activities.
- Prevent and prepare for emergencies involving hazardous wastes.
- Prepare hazardous wastes for transportation.
- Select legal and appropriate treatment and disposal options.
- Have a waste reduction program in effect.
- Obtain any required permits and pay the fees associated with hazardous waste activities.



Hazardous waste generators are responsible for the safe and legal handling of all their hazardous wastes from generation through accumulation, recycling, transportation, storage, treatment, and disposal. [Note: Also see Household Hazardous Waste.]

Categories of Hazardous Waste Generators

- **Conditionally Exempt Small Quantity Generators (CESQG):** A business which generates 100 kg (220 pounds or approximately 27 gallons) or less of hazardous waste per month.
- **Small Quantity Generators (SQG):** A business which generates between 100 kg and 1,000 kg (between 220 and 2,200 pounds, or between approximately 27 and 275 gallons) of hazardous waste per month.

- **Large Quantity Generators (LQG):** A business, which generates 1,000 kg (2,200 pounds or approximately 275 gallons) or more of hazardous waste per month.

Hazardous Waste Determination

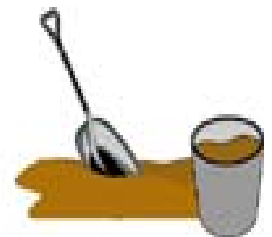
It is the hazardous waste generator's responsibility to determine if a waste is hazardous or not [22 CCR §66262.11]. The information a generator may use to classify a waste includes: (1) knowledge of materials and processes used (e.g., material safety data sheets and process flow diagrams) and (2) analytical testing data (i.e., hazardous waste analysis). If a generator is unfamiliar with their chemical processes and/or they cannot adequately explain whether an associated waste stream is hazardous or not, then a hazardous waste analysis should be conducted. This entails collecting representative samples of the waste and having it chemically analyzed at a state-certified environmental laboratory. A generator is subject to enforcement action if hazardous waste is misclassified as non-hazardous waste [22 CCR §66260.20].

Sample Collection

Sampling and sample management of wastes for analysis should be in general accordance with USEPA Publication SW-846, which specifies sampling and analytical methods mandated by hazardous waste regulation. Before sampling a waste, the generator should "plan" for sampling. Meaning, the generator needs to know why a sample is being taken, exactly what sample to take, and how to take it.

Representative Samples: When collecting waste samples, the generator must be sure to collect representative samples that can be expected to exhibit the average properties of the whole waste. The number of samples to be collected is dependent on the type and quantity of the waste, and the type and purpose of the sampling. If it is known that the waste is not variable (i.e., the waste chemical types and concentrations are consistent throughout the media to be sampled), then one sample point may be considered.

If a waste is variable, and waste chemical type and/or concentration differs within the media to be sampled, then more planning is required and more sampling points should be incorporated. For instance, a drum or tank may contain distinct "phases", with solids resting on the bottom and organic floating on the surface (sampling technique and equipment would be critical in this case) or wastes flowing from a process may vary in chemical



concentration as it leaves the process (it would be important to take several samples over time to obtain a representative sample). These separate samples could be mixed into one sample container to submit to the laboratory, or the laboratory can mix the samples together upon receipt. Provisions must be made to ensure that the sample(s) submitted to the laboratory contains a proportional part of the “whole.” SW-846, Chapter 9 gives good guidance on sampling protocols.



Sampling Containers and Equipment: When collecting waste samples, the generator must place the waste in appropriate laboratory-grade sampling containers using clean and appropriate sampling utensils (e.g., disposal plastic scoops). After the samples are collected, the samples should be placed in a refrigerated ice chest for transportation to the laboratory. The laboratory contracted to analyze the waste samples usually supplies the appropriate sample containers and equipment. Sometimes, for an additional fee, the laboratory can also provide a sampler to collect the waste samples as directed by the generator. In any sampling activity, the protocol for chain of custody should always be observed.

Waste Analysis

The reason the generator tests waste is to determine whether it is hazardous or not. A waste is hazardous if it exhibits any of the four characteristics of hazardous waste, which include ignitability, corrosivity, reactivity and toxicity (there are other criteria that defines a waste as hazardous, however, this information exceeds the scope of this guidance document). Therefore, the generator needs to know what to analyze the waste for prior to collecting the samples. Descriptions of the characteristic hazardous wastes and the associated analytical tests are presented below, except for reactive waste. Reactive waste [22 CCR §66261.23] is usually associated with pure or relatively pure compounds that have obvious reactivity characteristics (e.g., explode or create toxic fumes under common handling conditions). Also, in some cases, there are no reliable test methods for reactive waste. Generation of cyanide or sulfides is a major reactivity criterion



Ignitable Waste: Waste that may readily catch fire and sustain combustion is potentially ignitable waste [22 CCR §66261.21]. This waste should be analyzed for flash point (for liquid waste) or rate of combustion (for non-liquids). Examples of ignitable waste include spent fuel (e.g., gasoline) and waste solvent (e.g., petroleum naphtha).

Corrosive Waste: Waste that is acidic or alkaline that may readily corrode or dissolve materials they come in contact with, is

potentially corrosive waste [22 CCR §66261.22]. This waste should be analyzed for pH and/or rate of steel corrosion. Examples of corrosive waste include spent acid (e.g., sulfuric acid) and waste caustic rinse water (e.g., contains sodium hydroxide).

Toxic Waste: Waste that may cause deleterious health or environmental effects (e.g., carcinogen) is potentially toxic waste [22 CCR §66261.24]. There are numerous constituents that can make a waste toxic; therefore, toxic waste streams are abundant and diverse. Such wastes can contain heavy metals (e.g., lead), volatile organic compounds (VOCs), semi-volatile organic compounds, and various other organic constituents (e.g., herbicides and pesticides). There are several analytical methods that can be used to identify toxic constituents. This should be discussed with regulators, if a correction notice has been issued. The certified laboratory can be a valuable resource, as well.

If the constituents of the waste are unknown or potentially exhibit an adverse synergistic effect, an aquatic toxicity fish bioassay test could be run to determine the acute toxicity of the waste. Examples of toxic waste include metal polishing dust (e.g., copper, zinc and chrome), spent plating solution (e.g., chromium and cyanide), waste dry cleaning solvent (e.g., perchloroethylene), used oil, waste anti-freeze (e.g., ethylene glycol), and waste paint (e.g., contains potential VOCs and metals).

Once the laboratory has reported the analytical results, they must be interpreted to determine if the waste is hazardous. Most laboratories will cross-index the analytical results with regulatory limits.

Certified Environmental Laboratories

The waste samples should be taken to a state-certified environmental laboratory accompanied with chain-of-custody documentation, which identifies the waste samples, analytical tests, laboratory, and which is signed by the sample collector(s), transporter, and laboratory representative. There are numerous certified laboratories in Los Angeles County, which are summarized on the HHMD's "List of State-Certified Environmental Laboratories for Hazardous Waste Analysis Services." Contact your area inspector for a copy of the list. A listing of all state-certified environmental laboratories can be obtained from the California Department of Public Health, Environmental Laboratory Accreditation Program website:

<http://www.cdph.ca.gov/certlic/labs/Pages/default.aspx>.



General Hazardous Waste Management Requirements

The EPA ID Number

It is a violation to treat, store, dispose, transport, or offer for transportation hazardous waste without having an EPA ID Number. This number is site specific and identifies the generator to the California EPA, Department of Toxic Substances Control (DTSC) and the USEPA. "Site specific" means that every address that generates hazardous waste needs its own number. A contiguous property is considered the same site, whereas a secondary location not directly accessible to the first is a separate site. Each facility where hazardous waste is generated requires its own EPA ID number. A company with more than one site where hazardous waste is generated requires a separate ID number for each site. These numbers cannot be transferred from one facility to another.

To determine whether a federal or state EPA ID number is required, a generator must first determine the type and quantity of waste generated.

- If more than 1 kg of RCRA acutely hazardous wastes or more than 100 kg of other RCRA hazardous waste is generated per month, a *federal* EPA ID number must be obtained.
- If 1 kg or less of RCRA acutely hazardous wastes or 100 kg or less of other RCRA hazardous wastes is generated per month, a *state* EPA ID number should be obtained.

All generators, other than CESQGs who generate silver-only wastes from photo developing, must have an EPA ID number before a licensed transporter arrives at the generating facility for hazardous waste pickup and offsite transport.

To obtain a permanent state EPA ID Number, a generator must complete and submit an application form, which can be obtained by calling the DTSC at (800) 618-6942 or from the [DTSC website](#).

To obtain a federal EPA ID Number, a generator must complete and submit an application form, which can be obtained by calling the USEPA at (415) 495-8895 or from the [USEPA website](#).

Note: Some of the following requirements and/or cited section numbers apply to LQGs. The corresponding requirements and/or section numbers for CESQGs and SQGs can be found at 40CFR, Part 265.



Container Management

To comply with the container management requirements [22 CCR, Chapter 14 & 15, Article 9], containers need to be:

- In good condition, i.e., structurally sound, with tight fitting lids (§66265.171). Leaking container contents must be transferred to containers that are in good condition.
- Either made of a material that is compatible with waste contained or lined with a compatible material (§66265.172).
- Kept “closed” unless adding or removing hazardous waste (§66265.173(a)).
- Maintained in a manner to allow for adequate aisle space (22 CCR, Chapter 14, Article 3, §66265.35).
- Safely handled to avoid punctures (§66265.173[b]).
- Inspected weekly (§66264.174).
- Properly labeled (22 CCR, Chapter 12, Article 3), §66262.34 (f) (1-3).
- Ignitable or reactive wastes must be kept at least 15 meters (50 feet) from the property line (§66265.176).
- Incompatible wastes and materials must not be stored in close proximity to each other [§66265.177 (a) & (c)].

Hazardous Waste Accumulation Areas: The area(s) your facility use to accumulate hazardous wastes (e.g. wherever hazardous waste containers are located or stored) must also meet certain requirements and be managed in a safe and environmentally sound manner. This Title 22, CCR requirements include:

- Maintaining enough aisle space between containers or rows of containers to allow for easy inspections and access by emergency personnel in the event of a leak;
- For wastes that react with each other, the containers should be physically separated (by curbs, or in separate containment pallets) during storage;
- Accumulating/storing the waste containers on a surface that is free of cracks and gaps, and which is resistant to leaks or spills. Using fiberglass, steel or other type of secondary containment pallets are an excellent way to meet this requirement;
- Maintaining certain emergency equipment in the area. This includes fire extinguishers, spill control supplies, safety shower/eyewash, and emergency communication devices (such as a telephone or an alarm);



- Posting appropriate warning signs (such as “Caution – Hazardous Waste Storage Area,” “NO Smoking,” etc.);
- Maintaining reasonable area security so that only properly trained personnel have access to hazardous waste containers.

Incompatible Waste: Hazardous waste regulation requires that hazardous waste must be separated from incompatible materials. Additionally, the fire code requires that incompatible materials must be stored separately (See Chapter on Hazardous Materials Management Program for management and separation of incompatible materials).

Empty Container Management: If a container that previously held hazardous waste meets the regulatory definition of “empty” and established management practices are met, then the “empty” container is exempt from further hazardous waste regulations.



In order for a container to be considered legally empty all the following apply:

- All material must be removed, to the best extent possible, from the container.
- For containers that held a material that can be readily poured, all material must be removed by any practicable means (including pumping, aspirating and draining) before the container can be considered empty.
- For containers that previously held materials that are non-pourable, no hazardous material shall remain in the container that can feasibly be removed by physical methods including scraping and chipping. This applies to materials that pour slowly or don't pour at all from the container, including, but not limited to, viscous materials, solids that have “caked up” inside the container, and nonpourable sludge.
- Containers that held acute or extremely hazardous waste are considered empty if the container has been triple rinsed using a solvent capable of removing the material or cleaned by another method that is proven to achieve equivalent removal to triple rinsing.

In order to retain the exemption from regulation, “empty” containers shall be managed pursuant to the following management practices:

- Empty containers larger than five gallons in capacity shall be marked with the date they were emptied and shall be managed

within one year of being emptied by one of the following methods:

- By reclaiming the container's scrap value onsite by sending the container to a person who reclaims the container's scrap value;
- By reconditioning or remanufacturing the container onsite, or by shipping the container to a person who reconditions or remanufacture the container;
- If the container has been shipped offsite, the name, street address, mailing address, and telephone number of the facility where the empty container has been shipped, shall be maintained for three years.

Empty containers of five gallons or less in capacity can be discarded in the municipal solid waste stream (i.e., trash).

Tank Management

Generators who accumulate hazardous waste in tanks must meet the following requirements:

Inspection of Tank Systems: Generators must perform and document inspections of the following items at least once each operating day:

- Overfill/spill control equipment to ensure good working order;
- Aboveground portions of the tank system, if any, to detect corrosion or leaks;
- Data gathered from monitoring equipment and leak detection equipment (e.g. pressure and temperature gauges, monitoring wells, etc.) to ensure that the tank system is being operated according to its design;
- Construction materials and the area immediately surrounding the externally accessible portions of the tank system including secondary containment structures to detect erosion or signs of leaks;
- For uncovered tanks, the level of waste in the tank to ensure compliance with freeboard requirements.

Tank operating Requirements: Tanks holding hazardous waste must be provided with the following:

- Spill prevention controls (e.g. check valves, etc.);
- Overfill prevention controls (e.g. level-sensing devices, high level alarms, automatic feed cutoff, bypass to a standby tank, etc.);



- In the case of uncovered tanks, at least 2 feet of freeboard to prevent overtopping by wave or wind action or by precipitation.

[Exception: This freeboard requirement does not apply if the tank is equipped with a containment structure (e.g. dike, trench, etc.), drainage control system, or diversion structure (e.g. standby tank) with a capacity equal to or greater than the volume of the top 2 feet of the tank.]

Additional Hazardous Waste Tank System Requirements:



Integrity assessment/existing tank systems— An existing tank system that lacks secondary containment must have an integrity assessment to ensure it is not leaking or unfit for use. The written assessment must be reviewed and certified by a professional engineer.

New tank system assessment – Prior to placing into service, a new tank system must undergo an integrity assessment. The written assessment must be reviewed by a professional engineer.

Containment and detection of releases – Secondary containment systems must be designed and operated to prevent the movement of wastes out of the tank system to the soil, groundwater or surface water. They must be capable of detecting and collecting releases.

Response to leaks or spills – A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, shall be removed from service immediately, and the following requirements shall be satisfied:

- Implementation of general emergency procedures;
- Cessation of use; prevention of flow or addition of wastes;
- Removal of waste from tank or secondary containment system;
- Contain visible releases to the environment;
- Appropriate notifications/reports
- Provide secondary containment, repair, or close.

Closure – A hazardous waste tank system must be closed by:

- Removing and decontaminating all waste residues, contaminated tank systems, and soil;
- Identifying , managing and disposing of any hazardous wastes;
- Submission of a completed “Hazardous Waste Tank Closure Certification” form to the CUPA.

(Note: Post-closure requirements apply if not all contaminated soils can be practicably removed or decontaminated).

Secondary Containment: The generator must provide secondary containment for hazardous waste tanks unless a variance is obtained or the tank system is inside a building with impermeable floor and the waste has no free liquids.

Secondary containment systems are designed and operated to prevent the movement of wastes out of the tank system to the soil, ground water, or surface water. They must be capable of detecting and collecting releases. Some examples of devices that provide secondary containment include:

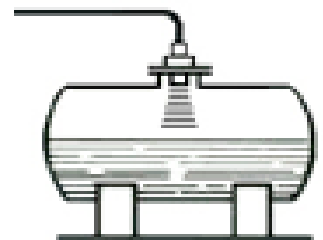
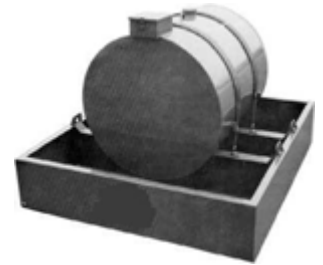
- Liners (external to the tank)
- Vaults
- Doubled-Walled Tanks
- Devices equivalent to those listed above and approved by the Department

The benefits of secondary containment include:

- *Cost efficiency* – spill cleanup without secondary containment is more costly.
- *Simplified cleanup* – entire volume is contained.
- *Decreased liability* – less potential for environmental damage or injury to health and safety of personnel, which may reduce insurance costs.
- *Reduced closure expense* – tanks with secondary containment are exempt from post-closure monitoring requirements if no leakage ever breaches the secondary containment system.
- *Increased environmental protection through leak detection and collection* -- hazardous waste has no outlet for contamination to the environment.

Tank Management Documentation: The following records must be kept to demonstrate proper management of tanks:

- Inspection logs (e.g., cathode protection system, valves, overflow protection).
- Annual integrity assessments, if tank system has no secondary containment.
- Testing and maintenance of equipment.
- Secondary containment certification.



Other records and documents that are required at the facility include:

- Record of completed training of employees on tank management.
- A Contingency Plan that explains how to deal with emergencies involving tanks and their contents.

Labeling Hazardous Waste Containers

Every hazardous waste container is required to be properly labeled. The type of label is dependent upon the container size and/or the contents of the container. The marking on the labels must be permanent and legible, and the completed label must be clearly visible on the container.



Labeling Portable Containers: Each hazardous waste container that is *portable or less than 110 gallons* and used for storage on the premises (not for transportation) must be properly labeled with:

- The words “Hazardous Waste”
- Contents of the container (e.g., waste oil, perchloroethylene, radiator coolant)
- Name and address of the generator
- Hazardous properties of the waste (e.g., flammable, toxic, reactive, corrosive)
- Physical state (e.g., liquid, solid, gas)
- Initial starting date for waste accumulation

Labeling Stationary Containers: For hazardous waste stored in *stationary containers greater than 110 gallons*, the words “Hazardous Waste” and the accumulation date are to be clearly marked on the container.

Labeling Containers for Transport: Containers *used to transport hazardous waste* must include labels with the words “Hazardous Waste”, plus the following statement and additional information below:

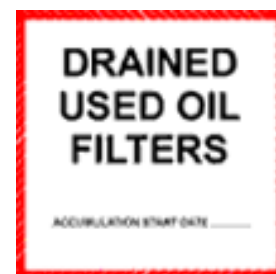
“State and Federal law prohibits improper disposal. If found, contact the nearest police or public safety authority, the U.S. Environmental Protection Agency, or the California Department of Toxic Substance Control.”

- Name and address of the generator
- Proper shipping name
- Hazard class and UN number
- Manifest number

Labeling Recyclable Materials (H&SC §25143.9): Excluded *recyclable material* (as defined by the Health and Safety Code, §25143.2) must be handled, stored and labeled on the premises in the same manner as hazardous waste with the exception that the words “Hazardous Waste” on the label is replaced with the words “Excluded Recyclable Material”. This material is subject to the ninety-(90) day storage requirements.



Labeling Drained Used Oil Filters (22 CCR, §66266.130): Containers of drained used oil filters which are recycled offsite at a scrap metal recycler must be labeled with the words “Drained Used Oil Filters” and the initial date of accumulation.



Labeling Universal Waste: Universal waste is hazardous waste. The containers or the areas of the container storage must be neatly labeled or marked as “Universal Waste” along with the accumulation start date. The type of universal waste must also be included on the label (e.g., “Universal Waste Batteries” or lamps, etc.). *Refer to the Section of Universal Waste Management in this Guidance Document.*

Types of Labels: The use of commercially printed labels is a convenience many generators take advantage of. Hazardous waste adhesive labels are available from many sources such as safety supply or industrial label supply companies.

Hazardous waste labels can be purchased from the following suppliers:

Label Master; 5724 North Pulasaki Road, Chicago, IL 60646 (800) 621-5808

Lab Safety Inc., P.O. Box 1368, Janesville, WI 53547 (800) 356-0783

HCL Labels, Inc., 510 East Maude Ave., Sunnyvale, CA 94086 (800) 421-6710



Hazardous Waste Accumulation

(22 CCR §66262.34)

The storage time length for the accumulation of hazardous waste at generator sites is based upon the quantity of hazardous waste stored and the rate that the waste is generated. Satellite storage accumulation may also be used in conjunction with the other options.

Accumulation Time for Conditionally Exempt Small Quantity Generators (CESQG): For businesses that generate less than or equal to 100 kg (220 pounds or approximately 27 gallons) of hazardous waste per month, *hazardous waste must be transported offsite within (90) calendar days once 100 kg of hazardous waste has accumulated.*

Accumulation Time for Small Quantity Generators (SQG): For businesses that generate more than 100 kg but less than 1,000 kg (between 220 and 2,200 pounds, or 27 and 275 gallons) of hazardous wastes per month, the following applies:

- *Hazardous waste may be stored onsite for up to 180 days, or*
- *If the waste must be transported over a distance of 200 miles or more, the generator may store the waste for up to 270 days.*

The preceding storage times apply only if the following conditions are met:

- The quantity of hazardous waste accumulated onsite never exceeds 6,000 kg.
- The generator has complied with all of the contingency plan requirements.
- The generator does not store extremely hazardous or acutely hazardous waste in an amount greater than 1-kg (2.2. pounds) for more than 90 days.

Accumulation Time for Large Quantity Generators (LQG): For businesses that generate more than 1,000 kg (2,200 pounds or approximately 275 gallons) of hazardous wastes per month, *hazardous waste cannot be stored for more than ninety (90) days.* The 90-day period for accumulation STARTS THE FIRST DAY the generator begins accumulating any hazardous waste.

Hazardous Waste Satellite Accumulation (22 CCR §66262.34.34(e)(1)(A)): Satellite accumulation is the collection of hazardous waste in a container, not in a tank, located at or near

WASTE ACCUMULATION & PICK-UP RECORD				
DATE	QUANTITY	DESCRIPTION	DATE	QUANTITY

the point (i.e., process or piece of equipment) where the waste is generated. The container must be under the control of the operator of the waste generation process.

The general requirements for Satellite Accumulation consist of the following:

- *Quantity Limits* - No more than 55 gallons of a hazardous waste or one quart of an acutely hazardous or extremely hazardous waste may be accumulated at each satellite accumulation point. These limits apply to each waste stream. The generator can accumulate more than one waste in each satellite accumulation area (22 CCR §66262.34(e)(1)).
- *Accumulation Time Limits* – The generator can keep a satellite accumulation container on-site for a maximum of one year from the date waste is first placed in the container, or 90 or 180 days from the date the generator accumulates 55 gallons of hazardous waste or one quart acutely hazardous waste, which ever occurs first. (22 CCR §66262.34(e)(1)(B)).

There are many advantages of satellite accumulation, which includes less frequent hazardous waste pickups. Also, if the generator operates only under satellite accumulation requirements and ships each container off-site for proper disposal within three (3) days of reaching the 55 gallon (or one quart) accumulation quantity limit, the generator is exempt from Title 22 requirements for hazardous waste management training, weekly container inspections, and posting of emergency information. However, keep in mind that other regulations (e.g. Hazardous Materials Storage Ordinance, Fire Code) may still require some of these things.

Speculative Accumulation: A hazardous material becomes a hazardous waste if it is accumulated speculatively.

Speculative Accumulation means that a material is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that, during the calendar year (commencing on January 1), the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75% by weight or volume of the amount of that accumulated at the beginning of the period.

Also, a generator may be considered as a speculative accumulator if retrograde materials are stored onsite for extended periods of time.



Retrograde materials are any hazardous materials, which are not used or sold for use in an originally intended purpose and which meets one or more of the following criteria:

- It has undergone chemical, biochemical, physical or other changes due to the passage of time or the environmental conditions under which it was stored.
- It has exceeded a specified or recommended shelf life.
- It is banned by *law, regulation, ordinance or decree*.
- It cannot be used for reasons of economics, health/safety or environmental hazard.

Any retrograde material becomes a recyclable material if it has not been used, distributed or reclaimed through treatment one year after the date the material becomes a retrograde material (or one year after the material is returned to the original manufacturer).



Manifesting Hazardous Waste

The Uniform Hazardous Waste Manifest

A Uniform Hazardous Waste (UHW) Manifest must accompany all shipments of hazardous waste transported off site for treatment, storage or disposal (unless it is transported under the consolidated manifest or it is a hazardous waste).

It is extremely important for the generator to be familiar with the manifesting procedure and requirements, since the generator is responsible for properly manifesting the hazardous waste.

The UHW manifest is a document that identifies the following information

- Type of waste being shipped,
- Facility the waste came from,
- Transporter of the hazardous waste,
- Destination of the waste,
- Method of disposal for the waste,
- Certification and/or notification for the Land Disposal Restrictions.

Purpose of the UHW Manifest: The purpose of the UHW manifest is to properly identify and track the hazardous waste shipment, its

generator, and its destination from “cradle to grave.” The manifest procedure ensures that both the generator and the DTSC are notified that the hazardous waste was disposed of properly.

Completing the UHW Manifest: The generator must properly complete the generator portion of the manifest according to the instructions printed at the back of the manifest. The generator must obtain the handwritten signature of the transporter and date of acceptance on the transporter portion of the manifest.

Distributing UHW Manifests: The manifest has six copies so that each person handling the waste can track its journey to disposal. The generator, transporter and designated facility each retain one or more copies of the manifest (according to the bottom right hand corner of the manifest) prior to passing the remaining copies on to the next handler of the waste.

Therefore, the manifest copies are in varying states of completion until the final copy reaches the disposal facility where the manifest is finally completed. The disposal facility sends one of the completed manifest copies to both the generator and the Department of Toxic Substances Control.

The generator should follow this procedure to properly distribute manifests:

- Complete the generator’s portion of the manifest.
- Retain the Generator Copy of the manifest until you receive the Signed Copy Returned from the designated receiving facility.
Note: This copy must be retained by the generator for three years.
- Mail a copy of the manifest signed by the generator and first transporter to DTSC within 30 days. If you do not receive the Signed Copy Returned by the facility within 35 days, you have to contact the transporter and the facility to attempt to locate the shipment.
- Send copy of the Generator Copy to DTSC Generator Manifest at P.O. Box 400, Sacramento, CA95812-0400.

Manifest Exception Reporting: A generator who does not receive a TSDf-signed manifest copy within 35 days of the waste shipment must contact the transporter and/or TSDf to determine the status of the waste.

If a TSDf-signed manifest copy is still not received within 45 days of the waste shipment, the generator must submit an exception report to the DTSC that includes the following:



Consolidated Manifests

- A legible signed copy of the UHW manifest left by the transporter at the time of shipment.
- A cover letter signed by the generator or the generator's authorized representative explaining efforts taken to locate the waste and the results of those efforts;
- A copy of the exception report must be kept by the generator for at least three years.

UHW Manifest Retention: A copy of each UHW manifest must be kept until the generator receives a signed copy from the TSDF designated to receive the waste. Each TSDF-signed manifest copy must be kept for at least 3 years from the date of waste shipment.

Obtaining UHW Manifests: Generators must purchase their manifests only from a vendor approved by U.S. EPA. The State no longer sells manifests. For list of approved vendors, go to: <http://www.epa.gov/epawaste/hazard/transportation/manifest/registry/printers.htm>

Consolidated Manifests

Consolidated manifesting allows certain registered transporters to combine, on a single manifest, specified wastes from multiple generators. Generators using this procedure are exempt from filling out a uniform hazardous waste manifest.

Qualifying Hazardous Wastes: Consolidated Manifesting is currently restricted to the following hazardous wastes:

- Used oil
- Dry cleaning waste
- Automotive parts cleaning solvents
- Ethylene glycol (coolant/antifreeze) from vehicle radiators
- Spent photographic solutions
- Sludge containing sodium hydroxide and heavy metals
- Asbestos
- Inks from the printing industry
- Chemicals and laboratory-packs collected from school districts

Qualifying Generators: Generators are responsible for their wastes "from cradle to grave." The consolidated manifesting procedure does not exempt generator from the requirements to properly characterize, handle, label, manage, and accumulate hazardous wastes. Generators using the consolidated manifest option must have an EPA ID number. Generators of up to 1,000 kg per month of non-RCRA waste (or RCRA hazardous waste that is

not required to be manifested pursuant to the federal act) are allowed under the consolidated manifesting procedure. Generators must keep all copies of each of the consolidated manifest receipts for at least three years from the date of shipment of hazardous waste.

Receipts associated with consolidated manifest hazardous waste transports must contain the following information:

- Generator name, address, telephone number, EPA ID number, contact person, generator representative signature;
- Shipment date;
- Manifest number;
- Waste volume;
- Waste codes;
- Waste type
- TSDF name, address and EPA ID number;
- A statement (signed by the generator) certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree (as determined by the generator) to be economically practicable.

[Exceptions: The only group excluded from the EPA ID number requirement is generators of less than 100 kilograms per month of "silver only" hazardous waste]

Land Disposal Restrictions

The Land Disposal Restrictions (LDRs) are a set of laws that regulate and restrict hazardous waste sent to land disposal. These laws require treatment of hazardous wastes to *reduce their hazard prior to land disposal*. They also give generators another incentive to reduce their waste. Under these regulations, hazardous waste is prohibited from land disposal unless:

- The waste already meets specific treatment standards,
- The waste is otherwise considered treated, or
- The waste is exempted from the LDR regulations

The LDR requirements apply to all persons who generate hazardous wastes, as well as owners and operators of hazardous waste treatment, storage, and disposal (TSD) facilities. The LDR's cover both RCRA wastes and non-RCRA wastes. This implies that hazardous waste is required to meet certain standards prior to land disposal. These standards are called treatment standards and



some wastes will require treatment to meet these standards and some will meet them without treatment. LDR regulations are found in 22 CCR Chapter 18 and 40 CFR, Part 268.



Restricted Waste and Notification Requirements: A *Restricted Waste* is a hazardous waste with a treatment standard that has an effective date beyond the current date. If a restricted waste is to be sent to a landfill for disposal, a *Notification* must either accompany the shipment or be sent ahead to the disposal facility. Since manifest documents are required for shipping hazardous waste, the notification may be attached or included with the manifest. The *Notification Statement* provides information about a restricted waste and its treatment standard(s).

All hazardous waste in California is restricted in some way; therefore, all shipments of hazardous waste in California must include a *Notification Statement*. However, state legislation has eliminated the regulation requiring *Notification* for non-RCRA hazardous waste destined for treatment, recycling, or out-of-state management; only direct land disposal of non-RCRA waste requires notification. State legislation has also repealed all *Notification* requirements from non-RCRA aqueous and solid waste containing organics. However, in California, all RCRA hazardous waste requires notification even if it is destined for treatment, recycling, or out-of-state management.



Prohibited Waste and Notification and Certification Requirements: A *Prohibited Waste* is a hazardous waste with a treatment standard in effect; this waste cannot be disposed of to land without meeting its associated treatment standard(s). Before a *Prohibited Waste* is sent to a landfill for disposal it must be treated (or verified that it already meets specific treatment standards). Once treated, a *Notification* and a *Certification* must either accompany the shipment or be sent ahead to the disposal facility. A *Certification Statement* affirms that the hazardous waste has met its associated treatment standard(s).

Unless a variance or extension is granted, a restricted waste becomes a prohibited waste on the effective date of the appropriate treatment standard(s) for that waste. Federal regulations required that (most) hazardous waste, which has been treated to non-hazardous status, is still subject to LDR requirements; if hazardous waste is sent to a RCRA Subtitle D facility, notification and certification statements must be sent to U.S. EPA. State regulations, however, specify that non-RCRA wastes that have been rendered non-hazardous are not subject to the State's LDR program.

LDRs and the Associated Generator Requirements [Section 66268.7(a)]: When shipping hazardous waste for treatment or land disposal, generators are required to do the following:

- Classify the hazardous waste;
- Determine appropriate treatment standard(s) and associated date(s);
- Provide notification to the receiving facility;
- Provide certification that the waste meets treatment standard(s) if the associated standards are in effect, the waste is going directly to land disposal, and the waste has already been treated to meet the standard(s) or meets the standard(s) without treatment.
- Retain all waste analyses, notifications, certifications, and other documents required to comply with LDRs for 5 years.

Biennial Report

Submitting a biennial report is required for a generator who ships any hazardous waste to a transfer, treatment, storage or disposal (TSD) facility within the United States. The report is due by March 1 of each even-numbered year and covers the previous year of hazardous waste activity (22 CCR Section 66262.41). Copies of biennial reports must be retained for three years (22 CCR Section 66262.40). For more information regarding biennial reports, call the Biennial Report Hotline at (916) 322-2880.



HAZARDOUS WASTE CONTINGENCY PLAN

All LQGs are required under state and federal hazardous waste regulations to prepare a written hazardous waste contingency plan and implement this plan in an emergency situation involving hazardous wastes. Because the contingency plan is similar in information and purpose to the Business Plan, the Los Angeles City and Los Angeles County Fire Departments previously accepted the Business Emergency Plan as the facilities emergency-planning document for both hazardous material and hazardous waste emergencies. However, DTSC (and U.S. EPA) hazardous waste regulations require certain components in the hazardous waste contingency plan, which were not always included in the previous versions of the Hazardous Materials Business Emergency Plan format.

Contingency Plan Elements

Regardless of what format your specific plan is in (and



whether or not you are using the newest version of the Consolidated Contingency Plan from the Unified Program Forms package), the required hazardous waste-specific elements for a hazardous waste contingency plan for **LQGs** include:

- Procedures for evaluating the hazard(s) of the hazardous waste incidents and the need for evacuation of surrounding areas;
- Procedures for inspections or monitoring of critical processes or operations when the facility operation has been stopped during the incident;
- Procedures for cleaning and repairing emergency equipment after the emergency is over;
- Procedures for noting/documenting the incident in the facilities operating record and reporting to DTSC if necessary;
- The home phone numbers of the Emergency Coordinator and the alternates listed in the order in which they shall assume responsibility (the Business Plan only requires work and 24-hour phone numbers);
- Description of arrangements made (1) to familiarize fire and police, emergency response teams, and hospitals with the facility and its wastes; and (2) with state and local emergency response teams and contractors to provide emergency services;
- A list of all emergency equipment (e.g., fire extinguishers and spill control equipment) and decontamination equipment located at the facility with a physical description of the equipment, a description of its location, and an outline of its capabilities;
- Emergency and alarm communication and procedures;
- An evacuation plan for facility personnel. The plan must describe primary and alternate evacuation routes and the current phone number for the California Emergency Management Agency (Cal-EMA)[i.e., (800) 852-7550]. Copies of the plan must be maintained at the facility

For **CESQGs** and **SQGs**, the requirements for Contingency Plan are reduced. The generator must post the following information next to the telephone:

1. The name and telephone number of the emergency coordinator;
2. Location of fire extinguishers and spill control material, and, if present, fire alarm; and
3. The telephone number of the fire department, unless the facility has a direct alarm.

Contingency Plan Amendments

The Contingency Plan must be reviewed and, if necessary, immediately amended whenever any one of the following occurs:

- Applicable regulations are revised;
- The plan fails in an emergency;
- The facility changes in its design, construction, operation maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste, or changes the response necessary in an emergency;
- The list of Emergency Coordinators changes;
- The list of emergency equipment changes.

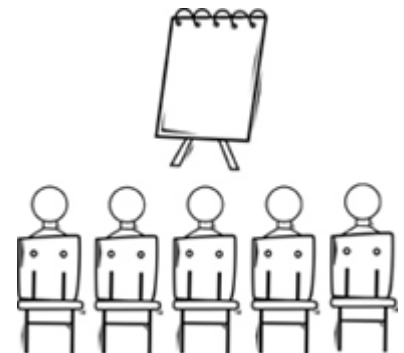
Generator Employee Training Requirements

Generators are required to provide training in hazardous waste management for all workers who handle hazardous waste on the job. Training will reduce the potential for mistakes that might threaten human health or the environment. It will ensure that personnel are thoroughly familiar with proper and safe hazardous waste handling procedures. It will also stress their roles and responsibilities in an emergency.

Large Quantity Generator Employee Training Requirements

All personnel at a large quantity generating facility involved in the management (i.e. generation, transfer, shipment, etc.) of hazardous waste must receive classroom instruction or on-the-job training in the proper management of hazardous waste. This training must:

- Be directed by a person trained in hazardous waste management procedures;
- Include instruction that teaches personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed (e.g. personnel who prepare or sign hazardous waste manifests must be trained in manifest requirements, those who label containers must be trained in labeling requirements, etc.);
- Be designed to ensure that personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, equipment, and systems;
- Be provided to personnel within six months after the date of their employment or assignment to a new facility or to a new position at a facility. *(Note: Personnel who have not yet completed this training must work under the supervision of a properly trained person);*
- Be reviewed annually through refresher training;
- Be documented by records that include:





- The job title for each position related to hazardous waste management, and the name of each employee filling the job;
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to each position;
- A written description of the type and amount of both introductory and continuing training that will be given to each person filling the above job positions;
- Documentation that this training has been given to, and completed by, facility personnel.

Small Quantity Generator Employee Training Requirements

All employees employed by small quantity generators of hazardous waste must be thoroughly familiar with proper waste handling and emergency procedures relevant to their responsibilities during normal facility operations and emergencies.

Training Record Retention Requirements

Hazardous waste management training records on current personnel must be kept until closure of the facility. Records on former employees must be kept for at least three years from the date the employee last worked at the facility.

Emergency Preparedness and Prevention

Planning and preparing for different types of emergencies that can occur at a business site, such as fire, an earthquake or a hazardous waste incident, is mandated by law. According to State hazardous waste laws and regulations, businesses must be maintained and operated to minimize the possibility of a release of hazardous waste to the air, soil, or surface water to prevent a threat to human health or the environment.



Required Emergency Equipment

The site shall be equipped, as applicable, with the following emergency equipment:

- An internal communication alarm system.
- A device (i.e. telephone or two-way radio) for calling outside emergency help.
- Fire control equipment, spill control equipment, and/or decontamination equipment.

- Have water at an adequate volume and pressure to supply water hose streams and foam producing equipment, or an automatic sprinkler system.

Access to communications or alarm system: Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee. If there is ever just one person on the premises, the employee must have access to a device, such as a telephone (immediately available at the scene of operation) or a handheld two-way radio capable of summoning external emergency assistance.

Testing and Maintenance of Equipment: All facility communications or alarm systems, fire protection equipment, spill control equipment, and contamination equipment, where required, must be tested and maintained as necessary to assure its proper operation.

Arrangements with Local Authorities

The facility owner or operator must attempt to make the following arrangements, as appropriate for the type of wastes handled at the facility and the potential need for the services of the response organizations:

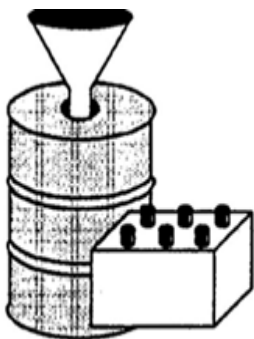
- Arrangements to familiarize police, fire departments, emergency response teams, and the local Office of Emergency Services with the layout of the facility, properties of hazardous wastes handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;
- Agreements with emergency response contractors and equipment suppliers;
- Arrangements to familiarize local hospitals with the properties of hazardous wastes handled at the facility and the types of illness that could result from fires, explosions, or releases at the facility.

Testing and Maintenance of Equipment: All facility communications or alarm systems, fire protection equipment, spill control equipment, and contamination equipment, where required, must be tested and maintained as necessary to assure its proper operation.



Emergency Coordinator

At all times there must be at least one employee either on the premises or on call (i.e. available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response and reporting activities. This Emergency Coordinator must 1) be thoroughly familiar with the facility, 2) have the authority to commit the resources needed to carry out the Contingency Plan, 3) be familiar with all aspects of the Contingency Plan and, 4) know the locations of all records within the facility.



Examples of Common Hazardous Waste Management

Management of Used Oil

In California, used oil must be managed as hazardous waste. Used oil is any oil that has been refined from crude oil, or any synthetic oil, that has been used, and, as a result of use or as a consequence of extended storage, or spillage, has been contaminated with physical or chemical impurities (HSC §25250.1).

Used oil includes, but is not limited to, the following petroleum oils:

- Used Motor Oil
 - Vehicle crankcase oil
 - Engine lubricating oil
 - Transmission fluid
 - Gearbox and differential oil

- Used Industrial Oil
 - Hydraulic oil
 - Compressor oil
 - Turbine oil
 - Bearing oil
 - Gear oil
 - Transformer (dielectric) oil
 - Refrigeration oil
 - Metalworking oil



EPA ID Number: A state EPA Identification Number is required for each site where used oil is accumulated or stored, with the exception of households and some conditionally exempt small quantity generators (CESQGs).

Labeling Used Oil: In most circumstances, above-ground storage tanks (ASTs) and containers accumulating used oil, and fill pipes

used to transfer used oil into underground storage tanks must be labeled with the words “USED OIL,” “HAZARDOUS WASTE,” and the initial date of accumulation. In addition, containers must be labeled with the name and address of the generator.

Accumulating and Transporting Used Oil: Used oil is hazardous waste, and in most instances, this means that the generator will contract with a registered hazardous waste transporter to have the used oil picked up within the appropriate accumulation period. Used oil is a waste that qualifies for the consolidated manifest, rather than the full uniform hazardous waste manifest. Most generators are only allowed 90 days to accumulate used oil at their facility before it must be transported by a licensed hauler to a permitted used oil storage and treatment facility.

Hazardous waste accumulation times for generators are discussed in detail in *General Hazardous Waste Management Requirements* of this guidance document.

In general, California law requires that a registered hazardous waste transporter transport used oil. However, households and some CESQGs (i.e., < 100kg, 220 pounds or 27 gallons of total hazardous waste) may transport up to 20 gallons of used oil per trip to an authorized used oil collection center *if* the oil is carried in containers that hold 5 gallons or less and specified conditions are met.

However, generators of used oil may transport up to 55 gallons of oil in containers of not greater than 55-gallon capacity only *if they get prior permission from the used oil collection center*. Again, this option is **ONLY** for households and CESQGs. Permission must be obtained from the used oil collection center prior to container or drum delivery. If these conditions are not met, the generator is not complying with the law and associated regulations.

Used Oil Shipment Record Keeping: Generators must keep the receipts associated with used oil shipments for at least 3 years from the date of shipment.

Used Oil Mixing Rule: Mixing used oil with any other hazardous waste is prohibited. Examples of hazardous wastes that are prohibited to be mixed with used oil include solvents, antifreeze and fuels. The law does allow for the inadvertent mixture of “minimal amounts of vehicle fuel” with used oil, but beware, such mixing could contaminate used oil, classifying it as a RCRA rather than a non-RCRA hazardous waste.



Management of Used Oil Filters

Drained used oil filters are generated from automobiles usually during oil changes. Used oil filters may exhibit hazardous characteristics for lead, other toxic heavy metals, and oil-based compounds. Used oil filters must either be managed as hazardous waste, or in accordance with the requirements for drained used oil filters. DTSC adopted special regulations (22 CCR 66266.130) in 1991 to encourage recycling of used oil filters and to protect public human health and the environment from the potential hazards posed by disposal of used oil filters. Fuel filters, including fuel dispenser and diesel fuel filters, are not used oil filters and may not be managed in the same manner as used oil filters. Disposal of used oil filters in trashcans and at sanitary landfills is prohibited.

Used oil filters must be managed as hazardous wastes unless all of the following requirements are met:



- *Drained of all free-flowing oil* – The filters must be drained of free-flowing used oil. If the filter is equipped with a device (such as a rubber flap located just inside the filter opening) that impedes the drainage of oil from the filter, that device must be manipulated to allow the oil to exit the filter freely, or the filter punctured, crushed, opened, drained, or otherwise handled in a manner that will allow the oil to exit the filter.
- *Properly contained, labeled and stored* – The drained filters must be contained in rainproof, non-leaking containers with tightly sealed lids. The container must be labeled “Drained Used Oil Filters” and the initial date of accumulation or receipt marked on each container. The initial date of accumulation is the date when the first filter is placed in the container or the date when a full or partially full container of filters is received at a second location.
- *Store without exceeding allowed time limits* – Filters in amounts less than one ton may be stored for a period of up to one year. Storage of one ton or more oil filters is limited to 180 days.
- *Transported to an allowed destination for purpose of metal reclamation* – Filters must be transported to a smelter or scrap metal processor for recycling or to a municipal solid waste incinerator for energy recovery if the residual casings are subsequently transferred to a smelter or scrap metal processors for recycling. A storage or consolidation facility that subsequently transfers filters to a smelter scrap metal

processor or municipal solid waste incinerator is also acceptable. Filters may also be transported to an authorized hazardous waste facility.

- *Transported under a bill of lading with a copy kept by the generator for three years* – A bill of lading must accompany each shipment. Bills of lading must include:
 - The generator’s name, address, and telephone number;
 - The transporter’s name, address, and telephone number;
 - The receiving facility’s name, address, and telephone number;
 - The quantity and size of each used oil container shipped;
 - The date of transfer.

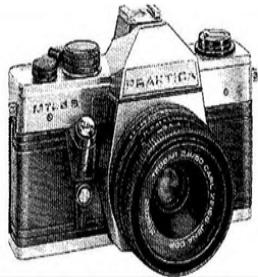
Silver Only Waste

There are reduced regulatory requirements for “silver-only” hazardous wastes that were mandated by Senate Bill 2111 (HSC 25143.13). Senate Bill 2111 mandates those “silver-only” hazardous wastes are to be regulated only to the extent they are regulated under the federal Resource Conservation and Regulatory Act (RCRA). This change only applies to “silver-only” hazardous wastes. On site treatment of photo-imaging solutions and wastewater will no longer be subject to Tiered Permitting authorization requirements. Generators of “silver-only” wastes continue to be considered hazardous waste generators, but are eligible for reduced management and transportation requirements.

- Silver-only generators are still considered hazardous waste generators because they remain subject to RCRA regulatory requirements and meet the definition of “generator” [40 CFR 261 and 261.19].
- Businesses that generate no more than 100 kilograms (approximately 27 gallons or 220 pounds) per month exclusively of “silver-only” hazardous wastes are exempt from most RCRA generator requirements as Conditionally Exempt Small Quantity Generators (CESQGs) [40 CFR 261.5].
- Although subject to reduced waste management requirements, CESQGs must:
 - Determine whether their waste is “silver-only [40 CFR 261.5(g)(1)].
 - Not accumulate on site more that 1000 kilograms of waste at any time [40 CFR 261.5(g)(2)].



Developing Photos Produces



SILVER WASTE

- Ensure that their “silver-only” hazardous waste is either recycled (reclaimed) or disposed at a facility that is permitted or otherwise authorized to manage the waste [40 CFR 261.5(g)(3)].
- CESQGs that treat photo-imaging solutions and wastewater to remove silver will be regulated only to the extent it is regulated under RCRA, and not require California Tiered Permitting authorization.
- Sludge generated by the treatment of “silver-only” containing solutions and wastewater, which are hazardous only for their silver content, are not considered solid waste, and therefore not hazardous waste, when reclaimed [40 CFR 261.2(c)(3)].
- CESQGs that ship sludge offsite for reclamation are not required to manifest the shipment or obtain an EPA ID number. However, they must be able to provide documentation that the sludge are being reclaimed [40 CFR 261.2(f)]. Examples of acceptable documentation include contracts with refiners and/or receipts from the sludge transporter for shipments of sludge to a refiner.
- Senate Bill 2111 provisions do not affect or apply to sewer waste discharge requirements established under the federal Clean Water Act or California” Porter-Cologne Water Quality Control Act.
- Examples of businesses which generate “silver-only” hazardous wastes from photograph, printing, and X-ray development wastes include:
 - One hour photo shops
 - Printer, graphic arts
 - Dental offices/clinics
 - Medical offices/clinics
 - Veterinary hospitals/clinics
 - Police stations
 - Professional photofinishers
 - Motion picture labs
 - Hospitals
 - Chiropractic offices
 - Schools with industrial labs
 - Government agencies
- Examples of wastes that are hazardous for constituents

other than silver and are not affected by provisions of Senate Bill 2111 include:

- RCRA listed wastes from electroplating.
- Dental amalgams that contain hazardous characteristic metals.
- Corrosive cleaning solution wastes.

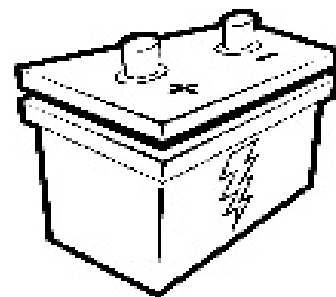
Contaminated Textiles

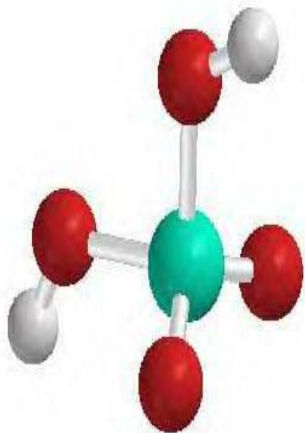
Textile materials (e.g. shop towels, uniforms, gloves, linens, etc.) that have become soiled with hazardous waste during commercial or industrial use are exempt from using hazardous waste manifest requirements and paying state hazardous waste fees if ALL the following requirements are met:

- The materials are made reusable by laundering or comparable methods of cleaning at a facility (i.e. commercial laundry) with a contingency plan for handling both on-site and off-site emergencies involving the materials and which maintains records of the date, type and quantities by piecework or weight of the materials laundered.
- The materials are not subject to federal regulation as hazardous wastes.
- They are not used to clean up or control a spill that is required to be reported to any state or federal agency.
- No hazardous waste has been added after the materials original use.
- No free liquids are released during transportation or storage of the materials.

Management of Spent Lead Acid (Automotive) Batteries

Because spent lead acid batteries contain lead, sulfuric acid, and other heavy metals, lead-acid battery disposal is fully regulated as a hazardous waste management activity, but when intact lead-acid batteries are managed for recycling, the handling requirements are relaxed (22 CCR §662266.80 & 66266.81). However, processing lead-acid batteries for recycling by draining the electrolyte, crushing, smelting or other physical methods is a fully regulated hazardous waste activity that requires a hazardous waste treatment permit.





H₂SO₄ **Sulfuric Acid** **is in Batteries**

If a business generates no more than 10 batteries per year, or stores or transports no more than 10 batteries at one time, the handler is not subject to the reporting and record keeping requirements given in the battery regulations as long as the batteries will go to someone who stores, recycles, uses, reuses or reclaims them. In order for businesses to be exempt from hazardous waste regulations for spent lead-acid battery generation, storage, and transportation, the generator must manage intact lead-acid batteries as follows:

- Undamaged batteries should be stored upright on a covered pallet over a non-reactive, curbed and sealed surface such as coated concrete or asphalt, and care should be taken to prevent the terminals of the batteries from short-circuiting.
- The batteries must be sent to a permitted hazardous waste recycling facility.
- No electrolytes or acids can be removed from the batteries.
- Less than one ton of batteries cannot be stored (accumulated) more than 180 days at one location.
- If more than 10 batteries at a time are shipped for recycling, a legible hazardous waste manifest or legible bill of lading must accompany the shipment. The generator, transporter and storage, recycling or disposal facility each must retain their copies of either of those documents for three years.

Damaged spent lead-acid batteries are batteries that are cracked, broken or missing one or more of their caps. The generator must manage damaged lead-acid batteries as follows:

- Damaged batteries must be stored and transported in non-reactive, structurally secure, closed containers such as polyethylene buckets or drums.
- The container holding damaged batteries must be labeled in ink or paint with the date the batteries were first placed there. This is considered the accumulation start date.
- “Damaged batteries” considered damaged solely on the basis of missing caps (i.e., no other leaks or damage) CAN be managed along with intact batteries once the caps are replaced.

Household Hazardous Waste

Household hazardous waste (HHW) is any hazardous waste generated incidental to owning and/or maintaining a place of residence. HHW does not include any waste generated in the course of operating a business at a residence.

A typical home can contain a vast array of household hazardous products used for cleaning, painting, beautifying, lubricating and disinfecting the house, yard, workshop and garage, which may be labeled as toxic, poison, corrosive, flammable, combustible or irritant.

The chemical-based household products from a single home may seem insignificant; but when millions of homes across Los Angeles County use similar products – handling, storing and disposing of them improperly – the combined effect becomes a major problem. The health and safety of people and animals, as well as the health of our communities and the environment is in danger when these types of products are discarded in household garbage, sinks or storm drains.

A homeowner who generates HHW does not have to meet all of the requirements that a business that generates hazardous waste must meet and can dispose of his/her HHW at a HHW collection event.

HHW Collection Events: A HHW collection event, operated by the County of Los Angeles Department of Public Works and the Los Angeles County Sanitation Districts, is a one-day, drive-through collection event where residents are invited to drive to a specified location to drop off their HHW.

Collection events are scheduled in different areas throughout the County. They are free, open to the public and are usually held on a Saturday from 9 a.m. to 3 p.m. An appointment is not needed to participate in a HHW collection event.

The City of Los Angeles also operates HHW collection events, which services over 20 different areas each year within the City of Los Angeles. All residents in the County are invited to dispose of their HHW at these events. The events are free and usually operated Friday through Saturday (occasionally Thursday through Saturday) from 9 a.m. to 3 p.m.

Additionally, certain cities have set up their own HHW collection programs for city residents. You can call the city for more information or call (800) 238-0173 or (888) CLEAN LA.



Examples of HHW: Typical HHW items that residents can bring to a HHW collection event include the following wastes:

- *motor oil, oil filters, brake fluid*
- *paint, paint thinner, and turpentine*
- *cleaners with acid or lye*
- *pesticides or herbicides*
- *household batteries or car batteries*
- *pool chemicals*
- *CRT's, old TV's, old computers and miscellaneous electronics*

There are some wastes that residents CANNOT bring to a HHW collection event. These prohibited wastes include:

- Explosives
- Ammunition
- Radioactive materials
- Trash
- Tires
- Business and commercial-related waste
- White goods (stoves, refrigerators, etc.)

HHW Transportation Requirements: Residents can load their personal cars with their HHW and transport their waste to the nearest HHW collection event. When delivering your waste to an event, you should:

- Bring the items you wish to dispose of in a sturdy box preferably in their original, labeled containers.
- Do not EVER mix products together.
- It is ILLEGAL to transport more than 15 gallons or 125 pounds of hazardous waste in your personal vehicle. There are some exceptions for used oil (e.g., 55-gallon limit if you have permission from the household hazardous waste collection facility) Refer to *Management of Used Oil* in this guidance document.

Universal Waste

Universal waste is hazardous waste. Meaning, it is toxic, ignitable, corrosive, and/or reactive. Some universal wastes are even listed hazardous wastes. However, universal waste is more common and poses a lower risk to people and the environment than other hazardous waste. Universal waste is generated by a wide variety of people rather than by the industrial businesses that primarily



generate other hazardous waste. New laws adopted since 2000 created California's *Universal Waste Rule* to simplify how we manage common hazardous wastes. State laws and regulations identify universal wastes and provide simpler rules for handling, recycling and disposing of them. Universal waste regulations are in the California Code of Regulations, Title 22, Division 4.5, Chapter 23. Without the new *Universal Waste Rule*, all universal waste would have to be managed under the same stringent standards as other hazardous waste.

Types of Universal Wastes

Universal wastes are common types of hazardous waste generated by almost everybody. The types of universal wastes specified in the state laws and regulations include, but are not limited to, the following:

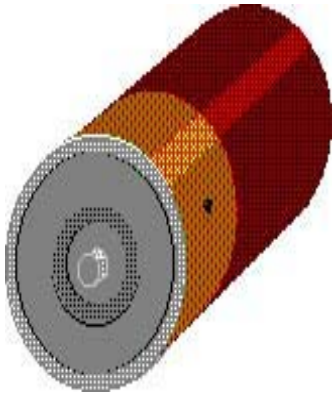
Batteries (e.g., flashlight batteries)	Mercury Thermostats and Thermometers
Lamps (e.g., fluorescent lights)	Mercury Switches
Non-Empty Aerosol Cans	Mercury Gauges
Consumer Electronic Devices (e.g., cell phones)	Mercury Novelties (e.g., singing greeting cards)
Cathode Ray Tubes (e.g., computer monitors)	Dental Amalgam

Wastes that do not contain hazardous substances are not universal wastes even if they are similar to the universal wastes listed above. For example, a fluorescent light that contains no added mercury or any other hazardous substances would not be hazardous; therefore, it would not be a universal waste.

On February 8, 2006, household universal wastes were no longer exempted from the Universal Waste Rule. Households must recycle their universal waste and are prohibited from disposing them in the trash. A *household* is a private residence; it is not a hotel, motel, bunkhouse, ranger station, fire station, crew quarters, campground, picnic ground, or a day use recreation area. Households are prohibited from disposing non-empty aerosol cans, cathode ray tubes, and most mercury containing materials in the trash. Nobody may dispose any type of universal waste in the trash in California.

The types of universal waste listed above are described in the following sections:





Batteries: Universal waste batteries include rechargeable nickel-cadmium batteries, silver button batteries, mercury batteries, small sealed lead acid batteries (burglar alarm and emergency light batteries), most alkaline batteries, carbon-zinc batteries, and any other batteries that exhibit a characteristic of a hazardous waste. Automobile batteries and other similar lead-acid batteries do not qualify as universal waste.

Lamps: Universal waste lamps include fluorescent tubes, high intensity discharge lamps, sodium vapor lamps, and any other lamps that exhibit a characteristic of hazardous waste. Effective February 9, 2004, all lamps that contain any quantity of intentionally added mercury (no matter how small) will be considered a state listed universal waste (i.e., M003 listed waste) and must be managed as such.



Non-Empty Aerosol Cans: The state legislature added non-empty aerosol cans to the list of universal waste in 2001 as Health and Safety Code, Section 25201.16. *Empty* means that all the contents are used up when the delivery mechanism functions properly. *Non-empty* means that there are still contents in the can that cannot be dispensed through normal use of the can (e.g., usually as a result of a damaged delivery mechanism). Universal waste non-empty aerosol cans contain materials and propellants that are ignitable, toxic, corrosive, and/or reactive. Households **CANNOT** dispose non-empty aerosol cans in the trash.



Consumer Electronic Devices: Consumer electronic devices (CEDs) or any of their components (that exhibit a hazardous characteristic) must be managed as universal waste. CEDs include, but are not limited to, cell phones, telephones, fax machines, game consoles, computer processing units, radios, VCRs, CD players, calculators, stereo equipment, and many other electronic products. Cathode ray tubes are not considered as CEDs in the universal waste regulations and are managed under separate universal waste regulations.

Cathode Ray Tubes: Cathode ray tubes (CRTs) containing lead must be managed as universal waste. CRTs are picture tubes contained in computer monitors, televisions, some camcorders and many other electronic devices. A typical CRT contains between two and five pounds of lead. Many television CRTs contain as much as eight pounds of lead. CRTs and CRT

glasses have specific regulations in the California Code of Regulations, Title 22, Division 4.5, Chapter 23, Article 7. Households *CANNOT* dispose CRTs in the trash.

Mercury Thermostats: Universal waste mercury thermostats contain small glass capsules of mercury to make electrical contacts to *turn on* associated heating ventilation and cooling (HVAC) systems. Most modern electrical thermostats do not contain mercury and need not be managed as universal waste.

Mercury Thermometers: All mercury containing thermometers, including fever thermometers, must be managed as universal waste. Households *CANNOT* dispose mercury thermometers in the trash.

Mercury Switches: Universal waste mercury switches are comprised of two types of switches, which include motor vehicle light switches and non-automotive mercury switches.

Motor vehicle light switches (automatic hood and trunk light switches), once removed from vehicles, were designated as universal waste by Health and Safety Code section 25214.6. As of January 2005, vehicles that contain the mercury switches will also be considered listed universal waste (i.e., M001 listed waste) and must be managed as such until the mercury light switches are removed. Households *CANNOT* dispose mercury motor vehicle light switches in the trash.

Non-automotive mercury switches (thermostats and tip switches in portable heaters, washing machines out-of-balance switches, silent wall switches, and other mercury containing switches), once removed from products, are universal waste. As of February 9, 2006, the non-automotive mercury switches and the products that contain them will also be considered listed universal waste (i.e., M002 listed waste) and must be managed as such until the mercury switches are removed. Households *CANNOT* dispose non-automotive mercury switches in the trash.

Mercury Gauges: Mercury containing pressure and vacuum gauges are now managed as universal wastes. These gauges include, but are not limited to, U-tube manometers, barometers, and blood pressure meters. Households *CANNOT* dispose of mercury gauges in the trash.



Dental Amalgam: Dental amalgam tooth filling materials including waste amalgam – bits and pieces from chair side traps and spent wastewater filters – must be managed as universal waste. Households and Dental offices *CANNOT* dispose dental amalgam in the trash or discharge it to the sewers.

Mercury Novelties: Universal waste mercury novelties contain mercury or mercury batteries such as some singing greeting cards, flashing athletic shoes, jewelry, and other items.

Other Mercury Containing Materials: Other mercury containing universal wastes include:

- *Medical Dilators and Weighted Tubing*
- *Rubber Flooring:* Older gymnasium floors that were poured in place to form indoor tracks and gymnastic areas frequently contain mercury.
- *Counterweights and Dampers:* Devices that use pouches of high density mercury to dampen shaking on hunting bows and snow skis or to absorb recoil on shotguns are examples of counterweights and Dampers that must be managed as universal waste.
- *Mercury Gas Flow Regulators:* These are older gas flow regulators that are managed exclusively by natural gas utilities.

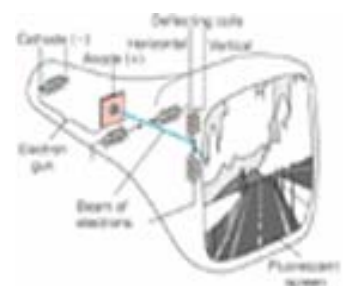
All the “other” mercury containing materials referenced above must be managed as universal waste. Households *CANNOT* dispose these “other” mercury containing materials in the trash.

Notification Requirements

Notification Requirements for Large Quantity Handlers of Universal Waste: Large quantity handlers of universal waste (LQHUW) must obtain an EPA Identification number before meeting or exceeding 5,000 kilograms (5.5 tons) of universal waste at one place at one time [22 CCR 66273.32(a)(1)]. They must also follow more stringent standards for handling their universal waste. Generally, only a universal waste collection center that accepts universal waste from other (offsite) businesses will accumulate large quantities of universal waste exceeding 5.5 tons at one time.

Notification Requirements for Cathode Ray Tube Generators:

Businesses that generate more than 5,000 kilograms (5.5 tons) per year of their own CRT universal waste must notify the Department of Toxic Substances Control (DTSC) on an annual basis (22 CCR 66273.82 Notification can consist of written notification to the DTSC using certified mail, return receipt requested OR electronic submission to the DTSC website at their electronic forms submittal



page. Notification information covers activities of the previous calendar year.

Notification Requirements for Handlers of Offsite Cathode Ray Tube Wastes: CRT universal waste handlers accepting more than five CRTs or greater than 100 kilograms (220 pounds) of CRT glass from other (offsite) businesses must notify the DTSC by either the written or electronic submission methods described above (22 CCR 66273.82).

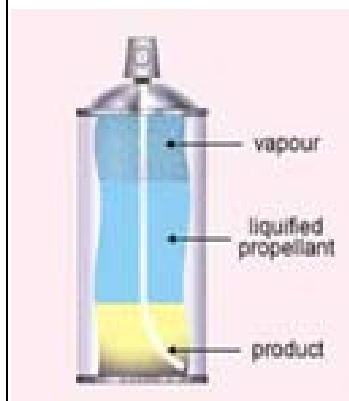
Notification Requirements for Processors of Cathode Ray Tube Wastes: Businesses that process (e.g., crush and shred) CRT universal wastes must notify the DTSC at least 30 days before commencing CRT processing activities [22 CCR 66273.83(c)]. The DTSC notification is written and very extensive and must include, but not limited to, the following:

- Description of the operation
- Financial responsibility demonstration
- Copies of air permits
- Records of CRT glass production and disposition
- Annual report
- Process closure and notification

If you want to process CRT universal waste at your business, you must first notify the DTSC of your proposed activities.

Notification Requirements for Processors of Non-Empty Aerosol Cans: Businesses that generate universal waste non-empty aerosol cans have the option to process (puncture and drain) their own cans but they must first notify our Department or the responsible local agency (i.e., the responsible CUPA) [HSC 25201.16]. It is illegal for businesses to process other (offsite) businesses' non-empty aerosol cans, unless they are permitted to do so (e.g., TSDf or household hazardous waste collection centers). The CUPA notification is written and very extensive and must include, but not limited to, the following:

- Facility identification and location information
- Type and number of cans to be processed
- Process equipment specifications



Therefore, if you want to puncture and drain your own non-empty universal waste aerosol cans at your business, you must notify our Department or your local CUPA of your proposed activities. Liquids drained from the cans can no longer be managed as universal waste; such liquids must be managed as “other” hazardous waste.

Management Requirements

Management Requirements for Small Quantity Handlers of Universal Waste:

Most handlers of universal waste are categorized as small quantity handlers of universal waste (SQHUW). Meaning, the individual or business does not accumulate 5,000 kilograms (5.5 tons) or more total universal waste at any time. There are separate regulations for handlers of CRT universal waste, which will be addressed in the next section below. For now, we will address the requirements for SQHUW as specified in the regulations, which include, but are not, limited to, the following:



- Do not dispose of universal waste to the trash.
- Do not accumulate more than 5,000 kilograms (5.5 tons) of universal waste at any one time. Otherwise, you will need to acquire an EPA identification number.
- Do not store universal waste for longer than one year after generating or receiving the waste (22 CCR 66273.15).
- Document the length of time onsite universal waste has accumulated from the date of its generation or its acceptance from someone else [22 CCR 66273.15(c)].
- Label or mark universal wastes, or containers or packages of universal waste, to identify their types (22 CCR 66273.14). The purpose of labeling is to ensure that emergency response personnel or an inspector can identify the universal waste.
- Generally, universal waste cannot be treated onsite except when cleaning up releases or managing specific wastes as specified in 22 CCR 66273.13. Treatment includes any activity that changes the characteristics of the waste. Releases must be cleaned up (e.g., leaking batteries or broken fluorescent tubes). Damaged universal waste must be repackaged and managed as universal waste. Manage any other materials generated, such as cleanup supplies and contaminated soil, as hazardous wastes if they are identified as hazardous waste (22 CCR 66273.13 and 17).
- Train employees in proper universal waste management

including handling, packaging, storing and labeling the universal waste, as well as how to respond to releases (22 CCR 66273.16). This training may be accomplished by simply giving employees written instructions or posting these instructions in the universal waste management areas of the building.

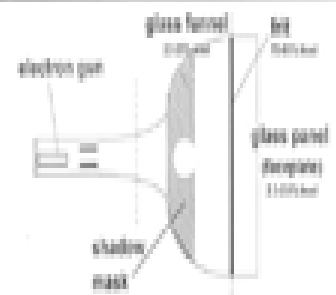
- For transportation purposes, determine whether the universal waste is hazardous material under the United State Department of Transportation (U.S. DOT) rules. For U.S. DOT hazardous materials, properly mark the packaging and placard the transportation vehicle. The applicable U.S. DOT regulations are in Title 49 Code of Federal Regulations, Parts 171 through 180.
- For transportation documentation purposes, proper shipping papers must be prepared, such as a bill of lading. However, a state uniform hazardous waste manifest is not necessary for universal waste shipments (22 CCR 66273.18).
- Universal waste can be transported in personal vehicles or by any common carrier allowed by U.S. DOT and California law to transport non-hazardous waste. Universal waste handlers are not required to use a registered hazardous waste hauler to transport universal waste (22 CCR 66273.18).
- Send all universal waste to a facility authorized to collect, recycle or dispose of universal waste. All universal waste must eventually be treated, recycled or disposed at a final destination facility, which must be a permitted treatment, storage, and/or disposal facility (TSDF).
- When exporting universal waste outside the country, comply with regulations addressing universal waste export (22 CCR 66273.20).
- Keep records of all shipments and receipts of universal waste at least three years (22 CCR 66273.19).

Management Requirements for Cathode Ray Tube Handlers:

In order to manage CRTs properly, as universal waste, all applicable requirements must be followed. Standards for CRT material handlers are set forth in Title 22, Chapter 23, Article 7 of the California Code of Regulations. These regulation requirements include, but are not limited to, the following:

- Do not dispose of CRT materials to the trash.
- Computer and television monitors must be handled and stored in a manner that prevents breakage. A CRT material handler shall contain any CRT materials in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the container (22 CCR

CRT Components



66273.83) A handler shall immediately cleanup and place in a container any CRT material that are broken or shows evidence of breakage, leakage or damage that could cause the release of lead or other hazardous constituents to the environment (22 CCR 66273.87). Broken CRTs may be managed as universal waste as long as they are shipped to an appropriate recycler.

- Each CRT, CRT device, container or pallet containing CRT devices or glass shall be labeled or marked clearly as “CRTs”, “CRT Devices”, “CRT Glass” or “Contains Leaded Glass” (22 CCR 66273.84).
- CRT wastes can be accumulated and stored on site for up to one year from the date generated or received from another handler. A CRT materials handler who accumulates CRT material must be able to demonstrate the length of time that the universal waste has been accumulated from the date it became a waste or was received. This may be demonstrated by keeping an on-site log or by labeling or marking all pallets, containers or individual CRTs to indicate when the material became a waste or was received on site (22 CCR 66273.85)
- When shipping CRT materials, the handler shall keep a record of each shipment of CRT material sent from the handler to other facilities (22 CCR 66273.88). The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of CRT material sent shall include the following information:
 - The name and address of the CRT material handler, destination facility or foreign destination to whom the CRT material was sent;
 - The quantity (count or weight) of each type of CRT material sent; and
 - The date the shipment of CRT material left the facility.
- When receiving CRT materials, the handler shall keep a record of each shipment of CRT materials received at the facility (22 CCR 66273.89). The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of CRT material received shall include the following information:
 - The name and address of the originating handler or foreign shipper;
 - The quantity (count or weight) of each type of CRT material received; and
 - The date of receipt of the shipment

- A CRT material handler shall inform all employees who handle or have responsibility for managing CRT material of the proper handling and emergency procedures appropriate for the waste handled at the facility (22 CCR 66273.86). A log of employee training regarding CRT management should be kept on site.
- The CRT material handler shall retain the records related to CRT management for at least three years. Such records include: inventory of waste generated, shipping and receiving logs/papers, employee training logs and so on.

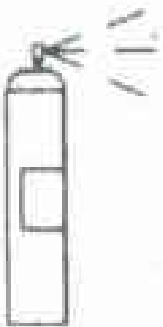
Management Requirements for Cathode Ray Tube Processors:

Facilities that process (e.g., treat or recycle) CRT materials must notify the DTSC prior to beginning processing activities as described in the previous section. Notification and management requirements for CRT material processing are addressed in the state regulations [22 CCR 66273.83(c)]. The DTSC currently implements the CRT material-processing program. If you want to process CRT universal waste at your business, you must first notify the DTSC of your proposed activities.

Management Requirements for Processors of Non-Empty

Aerosol Cans: Businesses that generate universal waste non-empty aerosol cans have the option to process (puncture and drain) their own cans but they must first notify our Department or the responsible local agency (i.e., the responsible CUPA) [HSC 25201.16] as described above in the previous section. It is illegal for businesses to process other (offsite) businesses' non-empty aerosol cans, unless they are permitted to do so (e.g., TSDf or household hazardous waste collection center). The rules for onsite processing of non-empty aerosol cans are specified in state Health and Safety Code [HSC 25201.16(h)-(j)]. The local CUPAs are responsible for overseeing the non-empty aerosol can processors. Therefore, if you want to puncture and drain your own non-empty universal waste aerosol cans at your business, you must notify our Department or your local CUPA of your proposed activities. Liquids drained from the cans can no longer be managed as universal; Such liquids must be managed as "other" hazardous waste. Specific draining requirements for non-empty aerosol cans include, but are not limited to, the following:

- Design specifications and operation guidelines for processing equipment



- Written procedures for management of drained contents
- Specifications for proposed area where cans are to be drained (i.e., processed)
- Written operation procedures and employee training documentation requirements

Management Requirements for Conditionally Exempt Small Quantity Universal Waste Generators: A conditionally exempt small quantity universal waste generator (CESQUWG) is a generator of universal wastes who:

- Generates no more than 100 kilograms (220 pounds) of RCRA hazardous wastes and no more than one kilogram (2.2 pounds) of acutely hazardous waste in any calendar month (when making this quantity determination, the generator must include all universal waste except CRT materials); and
- Generates a total of five or less CRT devices in a calendar year; and
- Remains in compliance with the federal EPA's special requirements for hazardous waste generated by conditionally exempt small quantity generators (40 CFR 261.5).

A business that qualifies as a CESQUWG is exempt from most universal waste management requirements (e.g., labeling and training). However, CESQUWGs are prohibited from disposing any universal waste in the trash.

Recycling Exclusions and Exemptions

The hazardous waste recycling laws and regulations are confusing. Basically, most people are confused by the hazardous waste recycling laws and regulations to some degree, and some people use this confusion to their advantage. So, what does this all mean? What are recyclable materials, exclusions and exemptions? What are the requirements for recyclers?

Definitions of Key Recycling Terms

Before summarizing laws and regulations, one should know the definitions of the following key terms:

Recyclable Materials are hazardous wastes that can be recycled.

Recycled means that a recyclable material has been used, reused, or reclaimed.

Used or Reused: A material is used or reused if it is either employed as an ingredient in a process to make a product or as a substitute for a commercial product.

Reclaimed: A material is reclaimed if it is processed to recover a usable product or if it is regenerated. Reclamation is basically using a waste stream after applying treatment to it.

Exclusion: The term “exclusion” is used to designate a provision in the state statute (HSC 25143.2) that “excludes” a recyclable material from classification as a waste. If a recyclable material is no longer regulated as a waste, it is not regulated under the hazardous waste laws (unless otherwise specified). So, if you meet the exclusion criteria, what you are handling is no longer a waste it is an “Excluded Recyclable Material.” That’s why they have special rules in state statute (HSC 25143.9).

Exemption: The term “exemption” is used to designate a provision in state statute (HSC 25143.2) that relieves a person from certain requirements, specifically in hazardous waste facility permit requirements. So, if you meet the exemption criteria, what you are doing does not need a permit, but what you are handling still is a waste and has to be handled like one in all other ways.



State statute (HSC 25143.2) contains exclusions that exclude qualifying recyclable materials from being classified as waste and exemptions that exempt qualifying activities from having to obtain a hazardous waste facility permits *if certain conditions are met*. Exclusions are addressed in HSC 25143.2 subdivision (b) and (d). Exemptions are addressed in HSC 25143.2 subdivision (c).

Exclusions

Subdivision (b) of HSC 25143.2 contains three exclusions. *Both RCRA and non-RCRA* recyclable materials may qualify. It states that recyclable material that is or will be recycled by any of the following methods shall be excluded from classification as a waste:

- Used or reused as an ingredient in an industrial process to make a product if the material is *not being reclaimed*, OR
- Used or reused as a safe and effective substitute for commercial products if the material is *not being reclaimed*, OR
- Returned to the original process from which the material was generated, *without first being reclaimed*, if the material is returned as a substitute for raw material feedstock, and the process uses raw materials as principal feedstock.

Subdivision (d) HSC 25143.2 contains six exclusions. *Only non-RCRA* recyclable materials may qualify. These exclusions are complex and some of them pertain solely to refinery-type businesses or other businesses engaged in uncommon recycling activities. The exclusions, or portions thereof, relating to uncommon recycling activities will not be addressed in this guidance document.

Recyclable material that meets or will meet any of the following requirements is excluded from classification as a waste: The material can be shown to be recycled and *used at the site where the material was generated* (i.e., it can be reclaimed, but it has to be used onsite).

OR

- The material qualifies as one or more of the following:
- The material is a *product* that has been processed from a hazardous waste and it meets both of the following conditions:

- The product does not contain constituents, other than those for which the material is being recycled that render the material hazardous, and
- The product is used, or distributed or sold for use, in a manner for which the product is commonly used.

OR

- The material is *used or reused as an ingredient in an industrial process* to make a product if the material is not being treated before introduction to that process except by one or more of the following procedures, and if any discharges to air from the following procedures do not contain constituents that are hazardous wastes and are in compliance with applicable air pollution control laws:
 - (A) Screening (B) Filtering (C) Sorting
 - (D) Sieving (E) Grinding
 - (F) Physical or gravity separation without the addition of heat or chemicals
 - (G) pH adjustment
 - (H) Viscosity adjustment

OR

- The material is *used or reused as a safe and effective substitute for commercial products*, if the material is not being treated except by one or more of the procedures listed above [(A) through (H)], and if any discharges to the air from the procedures listed above do not contain constituents that are hazardous waste and are in compliance with applicable air pollution control laws.

Exclusion Requirements: According to HSC 25143.9, a recyclable material shall not be excluded from classification as a waste, unless *all of the following requirements are met*.

- If the material is held in a container or tank, it must be labeled, marked, and placarded in accordance with requirements applicable to generators, except the container or tank shall be labeled or marked clearly with the words “Excluded Recyclable Material” instead of the words “Hazardous Waste,” and manifest document numbers are not applicable, AND
- The owner or operator of the business location where the material is located has a business plan that meets the requirements of HSC 25504, including but not limited to, emergency response plans and procedures, as described in subdivision (b) of section 25504, AND

- The material shall be stored and handled in accordance with all the local ordinances and codes, including, but not limited to, fire codes, governing the storage and handling of the hazardous material, AND
- If the material is being exported to a foreign country, the person exporting the material shall meet the requirements of Section 25162.1.

Recyclable Excluded Materials are Still Hazardous

Substances: Recyclable materials excluded from classification as a waste is not excluded from the definition of hazardous substances. Therefore, if a generator has quantities of excluded recyclable materials that exceed reportable quantities for hazardous materials as specified by the Hazardous Materials Management Program, the generator will have to acquire the associated permit and disclose his recyclable materials as hazardous substances.

Exemptions

Subdivision (c) of HSC 25143.9 contains two exemptions. *Both RCRA and non-RCRA wastes* qualify. The first exemption is specific to petroleum refinery waste and will not be addressed in this guidance document. The second exemption specifies conditions that have to be met.

In order to acquire the exemption, the material must *meet all* of the following conditions:

- The material is recycled (e.g., it can be reclaimed) and *used at the same facility at which the material was generated*, and
- The material is recycled within the applicable generator accumulation time limits, and
- The material is managed in accordance with all applicable requirements for generators of hazardous waste.

Exceptions to Exclusions and Exemptions

HSC 25143.2 subdivision (e), contains seven exceptions to the exclusions and exemptions. If a recyclable material is captured by one of these exceptions it will not qualify for the exclusion or exemption.

- Materials that are a RCRA hazardous waste used in a manner constituting disposal, or used to produce products that are applied to the land (e.g., fertilizer), or

- Materials that are a non-RCRA hazardous waste used in a manner constituting disposal, or used to produce products that are applied to the land (e.g., fertilizer). The DTSC may adopt regulations to exclude materials from regulation pursuant to “this paragraph,” or
- Materials burned for energy recovery, used to produce a fuel, or contained in fuels (there are exemptions and exclusions), or
- Materials accumulated speculatively (>1 year, use < 75%), or
- Materials determined to be inherently waste-like pursuant to regulations adopted by DTSC, or
- Used or spent etchants, stripping solutions, and plating solutions that are transported to an offsite facility operated by a person other than the generator and either of the following applies:
 - The etchants or solutions are no longer fit for their originally purchased or manufactured purpose, or
 - If the etchants or solutions are reused, the generator and the user cannot document that they are used for their originally purchased or manufactured purpose without prior treatment, or
- Used Oil

Record Keeping Requirements for Exclusions and Exemptions

HSC 25143.2 subdivision (f) contains the record keeping requirements that must be met as a condition to the exclusions and exemptions.

Any person who manages a recyclable material under a claim that the material qualifies for exclusion or exemption shall provide, upon request, provides all of the following information:

- The name, street and mailing address, and telephone number of the owner or operator of any facility that manages the material.
- Any other information related to the management by that person of the material requested by the authorized agency.

Any person claiming an exclusion or an exemption shall maintain adequate records to demonstrate to the satisfaction of the requesting agency or official that there is a known market or disposition for the material, and that the requirements of any exemption or exclusion pursuant to section HSC 25143.2 are met.

For purposes of determining that the conditions for exclusion from classification as a waste are met, any person, facility, site, or vehicle engaged in the management of a material under a claim



that our Department or the DTSC excludes the material from classification, as a waste shall be subject to inspection.

Recyclable Materials Biennial Report

Recyclable Materials Biennial Reports are completed by businesses and public agencies that recycle more than 100 kilograms per month of recyclable material under a claim that the material qualifies for an exclusion or exemption pursuant to HSC 25143.2. The directions for the Recyclable Materials Biennial Report instruct facilities that recycle at the same location at which the material was generated (onsite recyclers) and facilities that recycle materials generated at an offsite location (offsite recyclers) must complete a report. Persons who send materials to another location to be recycled, and who do not recycle materials onsite under a claim to an exclusion or exemption, need not complete a report. Offsite recyclers must complete one report for *each* generator from whom they receive recyclable materials. The Biennial Report has to be submitted to our Department every two calendar years and is due on July 1 of every even-numbered year. This form can be acquired from the *Long Version* of the UP Form, which can be obtained at our Department website at www.lacofd.org/hazmat.htm.

Sham Recycling

Generators engaged in “sham recycling” activities do not qualify for recycling exclusions or exemptions. To determine whether legitimate recycling, rather than sham recycling, is taking place, consider the following guidelines:

- If the material is only marginally effective for the claimed use, it's less likely recycling.
- If the material is similar to an analogous raw material or product, it's more likely recycling.
- If the material adds significant value to the final product, it's more likely recycling.
- If the secondary material has economic value comparable to the raw materials normally used, it is more likely recycling
- If there is a market for the end product, it is more than likely recycling.
- If the economics of using the material in the process make sense, it's more likely recycling.

Hazardous Waste Source Reduction and Management Review Act (SB 14)

The State of California considers source reduction of wastes as the preferred method of managing hazardous wastes. In order to reduce wastes at the source, a business must look at the processes that create the wastes and implement actions that will either cause a net reduction in the amount of hazardous waste generated or result in the generation of a waste that is less hazardous. The term hazardous waste minimization includes source reduction and recycling.

Source Reduction

Hazardous waste source reduction includes any action that reduces the generation of hazardous waste. Source reduction takes place before the hazardous waste is generated and results in lower quantities of hazardous waste or the lessening of the properties, which cause in to be classified as a hazardous waste [HSC section 25244.14(e)(1)].

Examples of source reduction include:

- Good Operating Practices – Good housekeeping, waste minimization training, purchasing, waste segregation, preventive maintenance
- Changes in Technology – Equipment layout, automation, process efficiencies, closed loop recycling
- Input Material Substitution- - Utilize less toxic alternatives
- Product Material Substitution – Changes in design, composition, or specifications of end product, including product substitution.

Source reduction does not include:

- Treatment
- Storage
- Off-site disposal
- Off-site recycling



There are incentives for businesses to reduce their waste. The incentives for source reduction include:

- Reduction in the liability associated with the handling, storage, and disposal of hazardous waste.
- Reduction hazardous waste disposal costs and hazardous materials cost.
- Reduction in employee exposures to hazardous materials and wastes.
- Reduction in regulatory requirements.

Senate Bill 14 Source Reduction Requirements

Passed in 1989, Senate Bill (SB) 14 is the first piece of legislation in the State of California to require that hazardous waste generators take a serious look at source reduction as the preferred method of managing waste.

Generators covered under SB 14 are those who routinely generate more than 12,000 kilograms (26,400 pounds or 13 tons) of hazardous waste or more than 12 kilograms (26 pounds) of extremely hazardous waste during a reporting year at a single site. Generators generating over 3,100 gallons of aqueous hazardous waste entering a pretreatment unit prior to sewer discharge are also included.

The Plan: Every four years, generators are required to prepare three documents. The first is a Source Reduction Evaluation Review and Plan (the Plan). The Plan must identify all major hazardous waste streams at the generator site. For each identified stream greater than 5% of the total waste generated, the generator must evaluate any and all potentially viable source reduction approaches, and implement those the generator has determined are feasible. A timetable for implementation must be included, and a technical and management representative of the facility must certify the Plan. The Plan is intended to cover activities to be taken during the following four-year period.

At a glance, The Plan should include:

- Name and address of site
- Description of site and business activities
- Quantity of hazardous waste generated
- Evaluation of source reduction options
- Implementation schedule
- Certifications

The Report: The second document the generator has to prepare is a Hazardous Waste Management Performance Report (the Report). The Report assesses the effectiveness of the hazardous waste management procedures previously implemented by the generator, including recycling and treatment activities.

At a glance, The Report should include:

- Name and address of site
- Description of current waste management practices
- Quantity of hazardous waste managed both on-site and off-site
- Assessment of implemented measures

Both the Plan and Report must be certified by a registered professional engineer, a registered environmental assessor, or a person familiar with the processes that generated the waste as well as, the owner (or an authorized representative) responsible for the processes/operations of the site. Plans and Reports are not required to be submitted to any agency, but must be made available to agencies and the public upon request. In addition, our Department will also usually request to review generators' Plans and Reports during hazardous waste inspections.

Summary Progress Report: The third document the generator has to prepare is the "Summary Progress Report." Unlike the Plan and the Report, which must be maintained onsite, the Summary Progress Report must be submitted to DTSC every four years. The Summary Progress Report is done on DTSC Form 1262.

At a glance, The Summary Progress Report should include:

- Data on source reduction accomplishments
- Information on projected source reduction projects

Source Reduction Compliance Checklist Option for Small Businesses: If a business qualifies as a "small business" (but not necessarily a small quantity generator), the small business has the option of completing a Source Reduction Compliance Checklist instead of a full Plan. The checklist is a simple, understandable way for small businesses to comply with the requirements of the source reduction law in an inexpensive, convenient manner. There are several types of Checklists – a generic one and many industry-specific ones. The Checklists must still contain an implementation schedule and certifications

Exempted Hazardous Waste: Not all hazardous waste is subject to the source reduction requirements. Some hazardous wastes are exempt, which include, but are not limited to the following:

- Automotive fluids
- Household hazardous wastes
- Site cleanup waste
- Lighting waste
- Lab-scale research waste
- Emergency response
- Lead acid batteries
- Pesticides containers
- Asbestos
- PCBs
- Medical waste

Compliance Deadlines

SB 14 requires generators to prepare SB 14 documents on or before September 1, 1991 and every four years thereafter, when generation of hazardous waste exceeds applicable threshold during a reporting year. For the most recent four-year period, the required SB 14 documents are the Plan, Performance Report, and Summary Progress Report. The three documents are to be prepared for the 2002-reporting year. All three reports should have been completed by September 1, 2003.

The requirement to prepare and submit the Summary Progress Report to DTSC's Office of Pollution Prevention and Technology Development applies to all generators subject to SB 14. For the 2002-reporting year, the Summary Progress Report was due September 1, 2003. The next reporting year is 2006.

If you have any questions regarding the SB 14 Source Reduction Program or you need additional information, guidance manuals or forms (e.g., DTSC Form 1262, Summary Progress Report), please contact the state program administrator:

Department of Toxic Substances Control
Office of Pollution Prevention and
Technology Development
P.O. Box 806
Sacramento, CA 95812-0806
(916) 322-3670

TIERED PERMITTING: ONSITE HAZARDOUS WASTE TREATMENT PROGRAM

Generators who want to treat their hazardous waste on site (i.e., at their facility), are required to retain the necessary permits before they begin treatment activities. The type of treatment permit required is dependent on the source, composition, concentration and volume of the hazardous waste to be treated, and it is also dependent on the treatment process to be used. Currently, the state has a five-tiered program for permitting the treatment of hazardous waste. This program is often referred to simply as *Tiered Permitting* (TP). Our Department issues the lower tier permits, known as Permit by Rule, Conditional Authorization, and Conditional Exemption, for treatment of onsite hazardous waste. The Department of Toxic Substances Control (DTSC) issues the upper tiers permits known as the Full Permit and Standardized Permit, for treatment of off-site hazardous waste.

Hazardous Waste Treatment

Hazardous waste treatment is any method, technique, or process which changes or is designed to change the physical, chemical, or biological character or composition of any hazardous waste or any material contained therein, or removes or reduces its harmful properties or characteristics for any purpose including, but not limited to, energy recovery, material recovery or reduction in volume. Examples of treatment include the following processes:



Grinding	Crushing	Shredding	Mixing
Evaporating	Filtering	Compacting	Drying
Gravity Settling	Electro-Winning	Adsorbing	Ion Exchange
Separating	Adjusting pH	Biological Degradation	Reducing

The legal definition of “treatment” was revised in 1998 that resulted in the exclusion of many activities provided that neither chemicals, heat nor pressure are added during the process [HSC 25123.5(b)]. Also, “treatment” does not include the removal of residues from manufacturing process equipment for the purposes of cleaning that equipment [HSC 25143.14].

Full Permit and Standardized Permit

The first two tiers of the TP program are the most highly regulated, and the associated permits are issued by the state DTSC.

The first tier is the *Full Permit*, which is required for facilities that treat RCRA hazardous waste accepted from other locations.

The second tier is the *Standardized Permit*, which is required for most facilities that treat non-RCRA hazardous waste accepted from other locations.

These two upper-most tiers are specifically for hazardous waste treatment facilities that accept hazardous waste from other generators. Our Department *Does Not* issue *Full Permits* or *Standardized Permits*. These permits must be acquired from the DTSC prior to storing or treating any hazardous waste accepted from other locations. The permit application process for these two upper tiers is extremely involved, and the associated permit fee range from thousands of dollars to hundreds of thousands of dollars. The rule of thumb is, if your business *does Not* have a *Full Permit* or a *Standardized Permit*, NEVER accept hazardous waste from other locations or businesses.

Tiered Permits Authorized by the Los Angeles County Fire Department

Our Department provides permits and authorization for the three lower tiers of the TP program. These tiers cover the treatment of RCRA and non-RCRA hazardous waste that are generated onsite at the facility within the businesses' normal operations. These lower tiers are designated for businesses that are engaged in certain low risk treatment activities; therefore, the permitting process and associated authorizations are simplified and the fees are lower. Compliance associated with the requirements of the lower tiers is determined by our Department through regulatory inspections after notification. These lower tiers are described below:

- **Permit By Rule (PBR):** This tier allows a facility to treat certain waste streams with designated methods [CCR, Div. 4.5, Chap. 45]. The PBR tier is for more hazardous waste streams and processes than Conditional Authorization and Conditional Exemption tiers described below.
- **Conditional Authorization (CA):** This tier applies to specific waste streams where most cannot exceed 5,000 gallons or

45,000 pounds in any calendar month. However, there are no quantity limits for treatment of specified aqueous waste with metals, aqueous waste with organic, elementary neutralization, or treatment of oily waste [HSC 25200.3]. Hazardous waste eligible for treatment within the CA tier is usually hazardous due to only a single hazard (i.e., flammability). If the waste is hazardous due to multiple hazards, it may need to be treated within the more regimented PBR tier.

- **Conditional Exemption (CE):** This tier applies to specified categories of lowest risk waste streams and treatment of limited volumes of waste of less than 55 gallons or 500 pounds in calendar month. The CE tier is further divided into the four following categories:
 - **Conditionally Exempt Small Quantity Treatment (CESQT)** [HSC 25201.5(a)]
To be eligible for CESQT, the facility may not have any other hazardous waste treatment permit.
 - **Conditionally Exempt Specified Waste Stream (CESW)** [HSC 25201.5(c)]
 - **Conditionally Exempt – Limited (CEL)** [HSC 25201.14]
 - **Conditionally Exempt Commercial Laundries (CECL)** [HSC 25144.6(c)]

The eligibility for the above lower tiers is based on a combination of the following five factors:

- Type of waste
- Chemical concentration
- Metals concentration
- Monthly volume treated
- Treatment technology

The DTSC has developed an *Onsite Tiered Permitting – Flowchart* to help businesses determine their eligibility for the three lower tiers described above. This flowchart can be obtained from the DTSC website at www.dtsc.ca.gov. The waste streams and treatment processes not found on the DTSC flowchart are not currently eligible for the three lower onsite tiers. Meaning, the *Full Permit* or the *Standardized Permit* would likely be required.

Exemptions and Exclusions

If a generator treats their hazardous waste onsite and also recycles their waste by methods pertaining to the recycling exemptions or exclusions (Refer to the Section on Recycling Exclusions and

Exemptions in this Guidance Document), their hazardous waste treatment activities may be *exempt* from tiered permitting requirements. In fact, a business that only recycles a portion of its non-hazardous waste stream (i.e., water) from the hazardous waste treatment process may still be eligible for the exemption.

Current DTSC policy allows a generator to recycle the hazardous, non-hazardous, or both portions of the waste onsite in order to meet the terms of the exemption. The DTSC has determined that it is sufficient to recycle only the water portion of the hazardous waste to qualify for the exemption. However, the DTSC may be reviewing this issue in the future and may establish standards for minimum amounts or percentages of recovered water actually reused onsite in order to qualify for a recycling exemption. Clearly, the larger the percentage of material recycled onsite, the more certain the recycling activity will be viewed as legitimate.

Even though operators that recycle their hazardous waste may be exempt from tiered permitting requirements, they have to abide by the recycling exclusion/exemption requirements and conditions as specified in the law. A generator should contact our Department before assuming that their recycling activities exempt them from the tiered permitting program. A wrong assumption by the generator could result in the illegal treatment of hazardous waste, which is a Class I violation punishable by fines, civil prosecution, and/or criminal prosecution.

Any business that claims an onsite recycling exemption allowing hazardous waste treatment without a tiered permit *must* file a *Recyclable Materials Biennial Report* with our Department every two years, with the next report being due on or before July 1, of an even year (e.g., 2004). This form is included in the CUPAs of Los Angeles County, *Long Version – Unified Program Long Version – Unified Program (UP) Form*, which can be downloaded from our Department web page at www.lacofd.org/hazmat.htm.

Onsite Hazardous Waste Treatment Management Requirements

Generators that want to treat their hazardous waste onsite must characterize their waste stream(s) to determine whether it is eligible for the lower tiers of our Department's hazardous waste treatment program. Meaning, the generator will have to conduct hazardous waste determination and waste analysis activities in order to sufficiently characterize their hazardous waste. In addition, the

generator needs to determine how many hazardous waste treatment units need to be employed and at what tier the units are going to operate under. Once the generators 1) adequately characterize their hazardous waste streams, 2) determine the amounts and types of treatment units required to sufficiently treat their waste, and 3) verify that one or more of the lower tiers are appropriate for their treatment activities, the generators can begin the notification process.

Onsite Hazardous Waste Treatment Notification

The generator must complete and submit a notification to our Department at least 60 days before starting any onsite hazardous waste treatment activities. Depending on the number of treatment units and associated treatment tiers, the notification process can be very extensive and time consuming.

The required notification forms generators must submit to our Department include the following CUPA Unified Program (UP) Forms:

- *Onsite Hazardous Waste Treatment Notification – Facility Page:* Only one facility page per facility has to be submitted regardless of the number of treatment units located at the site.
- *Onsite Hazardous Waste Treatment Notification – Unit Page:* One unit page has to be completed for each specific treatment unit located at the facility. These unit specific pages should be attached to the facility page for submittal. Commercial laundries are not required to complete unit specific pages, provided that laundering is the only hazardous waste treatment activity conducted by the facility.
- *Onsite Hazardous Waste Treatment – Waste and Treatment Process Combinations Page:* The process combination page is *Tier Specific*. Meaning, if a generator were pursuing the Permit by Rule treatment tier, the associated process combinations page would be referred to as the *Onsite Hazardous Waste Treatment – Permit by Rule (PBR) Page*. One process combinations page has to be completed for each specific treatment unit at the facility. These process combination pages should be attached to the facility page for submittal.
- *Certification of Financial Assurance:* The submittal of the certification of financial assurance is only required for Permit by

Rule and Conditionally Authorized onsite treater. PBR and CA operations are required to provide financial assurance for future estimated closure costs. Generators are eligible for exemptions from financial assurance requirements if closure cost estimates are not more than \$10,000. However, an adjustment to the closure cost estimate for inflation is required to be completed by March 1 of each year. This updated closure cost estimate must be maintained at the facility. Also, PBR operations that operate less than 30 days in any calendar year are also eligible for an exemption from the financial assurance requirement. However the Certification of Financial Assurance must be completed and submitted even if the generator qualifies for an exemption.

These notification forms can be downloaded from our Department web page at www.lacofd.org/hazmat.htm.

General Requirements for All Onsite Treatment Units (PBR, CA and CE)

All onsite treaters of hazardous waste must manage their waste in accordance to applicable requirements for a generator of hazardous waste. Such requirements include, but are not limited to, the following:

- *Contingency Plan*: The plan should address management practices that adequately minimize the potential for releases; address alarm/communication systems; and, list emergency equipment and phone numbers for emergency coordinators.
- *Written Training Records*: These records should document the type and amounts of training that hazardous waste handling employees have received.
- *Written Operating Instructions*: These written instructions must provide a record of the dates, volumes, residual management, and types of wastes treated in specific units. The written operating instructions must also address how to operate the treatment units(s) and carry out waste treatment; how to recognize potential and actual processes upset and respond to them; when to implement the contingency plan; and, how to determine if the treatment has been effective.
- *Written Inspection Schedule and Log*: The inspection schedule must document observations from the daily inspections of tanks and the weekly inspections of containers. A log of all inspections associated with the treatment systems must be kept onsite.

- *Adequate Compliance Records:* Adequate records must be maintained to demonstrate that the facility is in compliance with all applicable pretreatment standards and applicable industrial waste discharge requirements issued by the agency operating the publicly owned treatment works into which the secondary wastes are discharged.
- *Hazardous Waste Source Reduction Documents:* The generator has to prepare and maintain source reduction documents in compliance with the Hazardous Waste Source Reduction and Management Review Act (SB 14) requirements.
- *Tank Management:* Tanks of hazardous waste must be in good condition, labeled, and inspected daily. Storage time limits must be followed. Also, tanks must either have secondary containment or subjected to integrity assessments.
- *Container Management:* Containers of hazardous waste must be in good condition, closed, labeled, and inspected weekly. Storage time limits must be followed.
- *Proper Closure Activities:* Upon closure, the generator must remove or decontaminate any residue, equipment or soil.

Specific Requirements for CA and PBR Treatment Units

The Conditional Authorization and Permit by Rule tiers allow for the treatment of larger quantities of hazardous waste with usually higher concentrations of contaminants when compared to the lower Conditional Exemption tier options. Because of the higher associated risks of treatment, these tiers have additional management requirements, which include, but are not limited to, the following:

- *Containment Systems:* The generator must have secondary containment for treatment in containers and for transfer and storage areas. In addition, containment systems must be adequately maintained by repairing cracks and gaps and removing spills and leaks.
- *Phase I Environmental Assessment:* An environmental assessment has to be submitted to the DTSC within one year from initial notification. The assessment checklist and instructions are available from the DTSC.

- *Certification of Financial Assurance:* As previously discussed in the notification section, this certification must be completed and submitted to our Department prior to the treatment of any onsite hazardous waste.

Specific Requirements for PBR Treatment Units

The Permit by Rule tier allows for the treatment of larger quantities of hazardous waste with usually higher concentrations of contaminants when compared to the lower Conditional Authorization and Conditional Exemption tier options. Because of the higher associated risks of treatment, PBR tier options have additional management requirements, which include, but are not limited to, the following:

- *Written Waste Analysis Plan:* The objective of a waste analysis plan (WAP) is to describe the procedures that will be followed by the facility operator to obtain sufficient waste information to operate the hazardous waste treatment unit(s) safely and in compliance with regulatory standards. The WAP must describe the specific hazardous waste sampling and analysis procedures that will be conducted as part of the routine hazardous waste treatment activities.
- *Waste Analysis Records:* These records are a major portion of the operating records for the hazardous waste treatment units. The operating records describe the 1) quantities, methods and dates of all hazardous waste treated, 2) results of waste analyses, and 3) details of all the incidents that require implementing the contingency plan (i.e., summary reports).
- *Written Closure Plan:* The closure plan must describe how and when each treatment unit will be closed, including the steps needed to decontaminate each unit, and a schedule for the closure process.

Cyanide Regulation: On August 6, 2008, DTSC stopped issuing consent orders for treating aqueous cyanide containing waste and instead created new permit by rule authorization for destroying cyanides prior to sewer disposal (Title 22, Article 1, Chapter 45, Section 67450.11 (d)). This grant of authorization would apply only to businesses treating their own cyanide-containing wastes on the site where they were generated. DTSC gave CUPA the authority to be notified of any PBR cyanide treatment through the annual UP form reporting packet that facility submits to the CUPA. Refer to [http://www.dtsc.ca.gov/Hazardous Waste/cyanide/index.cfm](http://www.dtsc.ca.gov/Hazardous%20Waste/cyanide/index.cfm) for more information.

CHAPTER 2

HAZARDOUS MATERIALS MANAGEMENT PROGRAMS

HAZARDOUS MATERIALS MANAGEMENT PROGRAM

The Hazardous Materials Management Program ensures compliance with statutory provisions and regulations relating to hazardous materials inventories and emergency plans, which address emergency responses to hazardous materials releases or threatened releases and to avoidance of accidents involving certain hazardous materials. The California Health and Safety Code, Section 25502; the California Code of Regulations, Title 19, Section 2620-2734; and, the Los Angeles County Code, Title 32, Section 103.2.2.3 grant authority to our Department to administer the Hazardous Materials Inventories and Emergency Plans in incorporated cities and the unincorporated areas of Los Angeles County.

Businesses that handle significant quantities of hazardous materials that are subject to the requirements of the Hazardous Materials Management Program must notify our Department by submitting the necessary forms, inventories, and plans as described below.

Hazardous Materials

What is a hazardous material? According to the California Health and Safety Code, Section 25501, "hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Common types of hazardous materials include the following materials and wastes:

Petroleum Lubricating Oil	Hydraulic Oil	Cutting Oil
Used Oil	Gasoline	Diesel Fuel
Propane	Paint	Antifreeze (ethylene glycol)
Acetylene	Compressed Oxygen	Compressed Argon
Compressed Helium	Compressed Nitrogen	Compressed Carbon Dioxide
Freon	Chlorine	Ammonia



Perchloroethylene	Hydrochloric Acid	Mineral Spirits
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Basically, hazardous materials are those chemicals or substances which exhibit physical or health hazards, whether the materials are in a usable or waste state.

Physical Hazards

Materials that exhibit physical hazardous are within the following categories of hazardous materials.

Blasting Agent is any material or mixture consisting of a fuel and oxidizer intended for blasting, not otherwise classified as an explosive, in which none of the ingredients are classified as explosives, provided that the finished product as mixed and packaged for use or shipment cannot be detonated by means of a Number 8 test blasting cap when unconfined. Materials or mixtures classified as nitrocarbonitrates by the Department of Transportation (DOT) regulations shall be included in this definition.



Explosive is (1) a chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure, or high temperatures; or (2) any chemical other than a blasting agent, commonly used or intended to be used for the purpose of producing an explosive effect.

Flammable Gas is a gas that is flammable in a mixture of 13% or less (by volume) with air, or the flammable range with air is greater than 12%, regardless of the lower limit.

Flammable Liquid is any liquid having a flash point below 100 degrees F and having a vapor pressure not exceeding 40 psi at 100 degrees F. If the liquid is a waste and it has a flash point of 140



Combustible Liquid is a liquid having a flash point at or above 100 degrees F.

Flammable Solid is a solid substance, other than one which is defined as a blasting agent or explosive, that is (1) liable to cause fire through friction, or as a result of retained heat from manufacture or which (2) has an ignition temperature below 212 degrees F or which (3) burns so vigorously or persistently when ignited so as to create a serious hazard. This includes finely divided solid materials which, when dispersed in air as a cloud, may be ignited and cause an explosion.

Compressed Gas is (1) a gas or mixture of gases in a container having an absolute pressure exceeding 40 psi at 70 degrees F; or (2) a gas or mixture of gases in a container having an absolute pressure exceeding 104 psi at 130 degrees F regardless of the pressure at 70 degrees F. The term “inert gas” has been applied to some compressed gases such as nitrogen, helium, argon, and carbon dioxide. Compressed gases are to be identified by their common chemical names and/or proper chemical name. Furthermore, any compressed gas above the disclosure threshold quantity of 200 cubic feet is subject to disclosure reporting requirements (discussed below).



Cryogenic Fluids are those fluids that have a normal boiling point below -150 degrees F.

Oxidizer is a chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases



Pyrophoric is a chemical that will spontaneously ignite in air at a temperature of 130 degrees F or below.

Unstable (reactive) is a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shock, pressure, or temperature.

Water-Reactive Material is a material that explodes, violently reacts, produces flammable, toxic or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture.

Health Hazards

Materials are considered to be health hazards when there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed persons. Materials that exhibit health hazardous are within the following categories hazardous materials.

Carcinogen is a material known to cause cancer. A material is considered to be a carcinogen if (1) it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or (2) it is listed as a carcinogen or potential carcinogen in the latest edition of the Annual Report of Carcinogens published by the national Toxicology Program (NTP); or (3) it is regulated by OSHA as a carcinogen.





Corrosive is a chemical that causes visible destruction of, or irreversible lacerations in, living tissue.

Etiological Agent is a microorganism, or its toxin, which causes or may cause human disease, and is limited to those agents listed in Code of Federal Regulations (CFR) 42, part 72.3.

Highly Toxic Materials are chemicals or substances classified as "Poison A or B" under CFR 49, or which have been assigned a health hazard rating of 3 or 4 when rated in accordance with Uniform Fire Code (UFC) Standard Number 79.3.

Irritant is a substance other than a corrosive that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

Radioactive Material is any material or combination of materials that spontaneously emits ionizing radiation.

Target Organ Toxin is a substance that causes damage (target organ effects) to particular organs or systems.

Listed Hazardous Materials

There are numerous listings of hazardous materials in the laws and regulations. Two such listings include regulated substances and extremely hazardous substances. These lists are addressed in detail in the Risk Management Program (RMP) portion of this manual.

A list of chemical names and common names for hazardous wastes and hazardous materials is presented in the California Code of Regulations, Title 22, Section 66261.126. California regulations can be accessed at DTSC's web site at <http://www.dtsc.ca.gov/>.

Management of Hazardous Materials

Separation of Incompatible Chemicals

Title 32 of the Los Angeles County Code, Section 8001.9.8 requires that incompatible materials be stored separately. Chemical reactions occur when certain chemicals are mixed together. In uncontrolled circumstances (i.e., spills), chemical that are not



compatible with each other may react with one another and produce any of the following hazards:

- Heat or pressure
- Fire or explosion
- Violent reaction
- Toxic dust, mists, fumes or gases, or
- Flammable fume or gases

Chemicals which, when mixed with each other, can react to produce the above hazards are termed “incompatible.” They must be stored separately in order to prevent uncontrolled chemical reactivity hazards. For hazardous materials storage, this requirement only applies *if* containers have a capacity of greater than five pounds or one-half gallon.

Incompatible chemicals are typically separated from one another by the following methods:

- Distance – separate by a distance of not less than 20 feet
- Partition – isolate using partitions, berms or spill pallets
- Cabinets – enclose in prefabricated structures specifically for chemical storage

Chemicals can usually be grouped into generic hazard groups, with the more common groups being flammable/combustible, acid, alkaline, oxidizer and reactive. These groups are incompatible with each other and must be stored separately. The best way to determine incompatibility of your chemicals is to consult the Material Safety Data Sheets (MSDS). Section One of the MSDS will identify the chemical family and Section Four (Reactivity Data) will identify incompatible materials. Hazardous waste may be harder to categorize, as it may have undergone chemical changes in the process of becoming a waste. If the waste has not retained the same chemical properties as the material, consult the waste profile (for disposal) or a professional to help you determine in what hazard group the waste belongs.

Hazardous Materials Labeling

If hazardous materials are not properly labeled they must be managed as hazardous waste [22 CCR 66261.2(f)]. Title 32 of the Los Angeles County Code 8001.9.8 requires that individual containers, cartons or packages be conspicuously marked or labeled in accordance with nationally recognized standards. These standards can be found in the Occupational Safety and Health Act (OSHA), Title 29 CFR 1910.1200(f), which require that each



ACETONE	<input type="checkbox"/>	4 Severe hazard
HEALTH	1	3 Serious hazard
FLAMMABILITY	3	2 Moderate hazard
REACTIVITY	2	1 Slight hazard
PERSONAL PROTECTION	<input type="checkbox"/>	0 Minimal hazard

container of hazardous chemicals in the workplace be labeled, tagged or marked with the following information:

- Identity of the hazardous chemical(s)
- Appropriate hazard warnings

Labels or tags can be purchased from a safety supply company, or the required information can be marked directly on the container. Chemical name(s) and hazard warnings can be found on the MSDS provided by the supplier when the chemical was purchased. If you can not locate the MSDS, obtain one from the supplier. Place the label, tag or marking in a conspicuous place on the container. Individual stationary process containers can be identified by signs, rather than affixing the label to the container.

Who Qualifies as a Hazardous Materials Handler?

Reporting Criteria

State law requires disclosure by all businesses that handle a hazardous material or a mixture containing a hazardous material above the reportable quantity at any one time during the reporting year. Reportable quantities are aggregate quantities equal to or greater than a total volume of 55 gallons or a total weight of 500 pounds, or 200 cubic feet at standard temperature and pressure for compressed gases.

A mixture that contains one percent or more of a hazardous ingredient is a hazardous material. A mixture that contains on tenth of one percent or more of a carcinogen is a hazardous material. Regulated substances (RS) must be reported if the listed threshold quantity (TQ) is exceeded even if this quantity is less than 55 gallons, 500 pounds, or 200 cubic feet.

A business that handles quantities of hazardous materials that exceed the above referenced reportable quantities must complete the required unified program forms to obtain a Hazardous Materials Management Program permit from our Department unless one of the following exemptions apply.

Exemptions

Oxygen, nitrogen, and nitrous oxide, ordinarily maintained by a physician, dentist, podiatrist, veterinarian, or pharmacist, stored at each office or place of business in quantities of not more than 1,000 cubic feet of each material at any one time, are exempt from reporting requirements [HSC 25503.5 (b)(1)].

Lubricating oil is exempt *if* the total volume of each type of lubricating oil does not exceed 55 gallons and the total volume of all types of lubricating oil handled at that facility does not exceed 275 gallons, at any one time. “Lubricating oil” means any oil intended for use in an internal combustion crankcase, or the transmission, gearbox, differential, or hydraulic system of an automobile, bus, truck, vessel, plane, heavy equipment, or other machinery powered by an internal combustion or electric powered engine [HSC 25503.5 (b) (2) (A) and (B)]. “Lubricating oil” DOES NOT INCLUDE used oil.

Retail stores are exempt from disclosure requirements if the hazardous material is contained solely in a consumer product for direct distribution to, and use by, the general public [HSC 25503.5 (c) (1)]. Auto parts retail stores that are collection centers for used oil need to disclose waste oil. If a retail business handles certain quantities of a product which the inspector discerns to pose a significant threat to public health, safety or the environment, the business can be required to disclose that material. Mixed retail/wholesale stores are exempt from disclosure requirements with the exception of propane (or other hazardous materials) used by the store for operational purposes. Auto parts retail stores that are collection centers for used oil need to disclose waste oil. All hazardous waste generated at retail stores in quantities exceeding state reporting quantities IS NOT exempt.

Unstaffed remote facilities located in an isolated sparsely populated area may be exempt from annual reporting requirements. Businesses deemed as exempt will be required to submit an initial inventory and business plan for review and pay a processing fee. Upon approval, the business will no longer be required to submit an annual inventory or business plan. The business will also be exempt from any annual fees. Not all unstaffed remote facilities qualify for the exemption. For example, the types and quantities of materials onsite are limited to one or more of the following:

- (1) Five hundred standard cubic feet of compressed inert gases,
- (2) Five hundred gallons of combustible liquid used as a fuel source,
- (3) Two hundred gallons of corrosive liquids used as electrolytes in closed containers,
- (4) Five hundred gallons of lubricating and hydraulic fluids,
- (5) Twelve hundred gallons of flammable gas used as a fuel source.



Farms: A business plan is not required from a business operating a farm for the purposes of cultivating the soil or raising or harvesting any agricultural or horticultural commodity; however, the business is required to submit an annual inventory to the County Agricultural Commissioner [HSC 22503.5 (c) (5)]. The County Agricultural Commissioner then forwards the inventory directly to our Department.

Marine and rail transportation containers: Hazardous materials contained in any rail car, tank car, rail freight container, marine vessel, or marine freight container that remains within the same railroad facility, marine facility, or business facility for less than 30 days are exempt from disclosure reporting requirements. But if storage is for more than 30 days the business is subject to disclosure reporting requirements [HSC 25503.7].

Diesel fuel at a construction sites: Diesel fuel stored at any temporary construction site is exempt from disclosure reporting requirements. However, the responsible construction company should notify the local fire station, in writing, stating how much diesel is involved, how it is stored, where it is stored, and the estimated length of time it will be at the site.

Hazardous Materials Management Program Requirements

General Requirements

Most businesses that handle reportable quantities of hazardous materials are required by state law and regulation to prepare, submit, and implement hazardous business plans for emergency response to releases or threatened releases of hazardous materials. These business plans must include the facility's inventory of hazardous materials handled, an emergency response plan for actual or threatened releases, an employee-training program, and a facility map displaying the locations of reportable hazardous materials. The chemical inventories are to be updated and submitted annually, and the overall business plans are to be reviewed and submitted every three years or as often as significant changes in business operation require. These requirements are specified in the California Health and Safety Code, Sections 25503.5, 25504, 25505, 25509 & 25510, and in Title 19 of the California Code of Regulations, Sections 2729-2734. In addition to these disclosure requirements, hazardous materials handlers within the jurisdiction of our Department must obtain an annual Unified Program Facility Permit for the Hazardous Materials Management



Program and any of the other CUPA program element permits if applicable.

Standardized Unified Program Forms

In order to help businesses comply with the Hazardous Materials Management Program requirements, our Department has adopted standardized state forms that, when completed and submitted, satisfy the disclosure requirements for most businesses. The pertinent laws and regulations should always be reviewed to verify that the completed form submittals are sufficient to comply with the requirements expected for your business. Copies of the Standardized Unified Program (UP) Forms can be downloaded electronically by accessing our Department's web site at <http://www.lacofd.org>. Once you access our home page, please select the "Customer Services" ellipsis and, then, left-click on "Health Haz Mat" to access the Health Hazardous Materials Division web page, where the forms can be downloaded from.

General UP Forms to be completed include the Business Activities Page and Business Owner/Operator Identification Page (Form 2730). UP Forms to be completed that are specific to the Hazardous Materials Management Program include the Consolidated Contingency Plan and the Hazardous Materials Inventory – Chemical Description (Form 2731). These two specific forms are described below.

The Consolidated Contingency Plan (CCP), when completed and submitted to our Department, generally satisfies the business plan, emergency response plan, employee-training program, and facility map requirements of the Hazardous Materials Management Program. At a minimum, the CCP should be reviewed and submitted to our Department every three years.

The Hazardous Materials Inventory – Chemical Description (Form 2731) when completed and submitted to our Department, generally satisfies the hazardous materials inventory requirement of the Hazardous Materials Management Program. The hazardous materials inventory must be updated submitted to our Department every year. However, after the businesses' complete their initial inventory submittals, the inventories are entered into our Department's computer database, whereby the businesses will later receive annual computer-generated printouts of their inventories to review, update and, then, submit to our Department.

Clarifications for Annual Hazardous Materials Reporting Form Submittals

After your business initially submits the required UP Forms for the Hazardous Materials Reporting Program, it will begin receiving an annual Hazardous Materials Reporting Forms compliance package from our Department, which will include a computer generated printout of your Hazardous Material Inventory. The annual compliance package will also include blank Hazardous Materials Inventory, Chemical Descriptions Forms (Form 2731) and a blank Consolidated Contingency Plan (CCP). In order to avoid confusion, the following clarifications have been provided to help businesses understand and complete Hazardous Materials Reporting Forms included in the annual compliance packages. These clarifications were derived from common reporting mistakes and frequently asked questions.

Consolidated Contingency Plans (CCPs)

- Blank CCPs will be attached to you Annual Hazardous Materials Reporting Forms every year. The law requires that a CCP for your business must be completed or updated every three years. Therefore, **if you have completed a CCP within the last two years**, you DO NOT have to complete and submit the blank CCP forms enclosed in the compliance packaged.

Hazardous Materials Inventory – Chemical Description (Form 2731)

- The “**MAXIMUM DAILY AMOUNT**” (Field #218) referenced on Form 2731 is the MAXIMUM amount of the chemical you have at anytime during the year. It is NOT the maximum amount of the chemical you USE on a daily basis.
- The “**AVERAGE DAILY AMOUNT**” (Field #217) referenced on Form 2731 is the AVERAGE amount of the chemical you have at anytime during the year. It is NOT the average amount of the chemical you USE on a daily basis.
- If you are **REVISING** or **DELETING** chemicals from your Hazardous Materials Inventory, please make revisions or write “delete” directly on the enclosed **computer printout** of your chemical inventory information.

- If you are **ADDING new chemicals** to your inventory, use the blank Form 2731 enclosed in the compliance package. If you have more than one chemical to add, make copies of the blank form. Please use one Form 2731 per chemical.
- If there is NOT a **computer printout** of your chemical inventory in your annual Hazardous Materials Reporting Forms compliance package, then, you need to **ADD** your chemicals by completing one Form 2731 per chemical.
- If your Hazardous Material is **PURE**, be sure to fill in the **CHEMICAL NAME** (Field #205), **COMMON NAME** (Field #207), and **CAS #** (Field #209) on Form 2731. You DO NOT complete the **HAZARDOUS COMPONENT** section (Fields #226 to #246b).
- If your Hazardous Material is a **MIXTURE** or **WASTE**, DO NOT fill in the **CHEMICAL NAME** (Field #205) or the first **CAS #** (Field #209) on Form 2731. However, be sure to complete the **HAZARDOUS COMPONENT** section (Fields #226 to #246b), which includes the component names, EHS status, and CAS #.
- For **PURE** chemicals, only “Check” “**YES**” for RS (Field #246a) EXCEEDS the Threshold Quantity (TQ) amount listed on Regulated **Substances List** enclosed in the compliance package.
- For **MIXTURES** or **WASTES** only “Check” “**YES**” for RS (Field #246b) on Form 2731 **IF** the **HAZARDOUS COMPONENTS** are LISTED AND EXCEED the Threshold Quantity (TQ) amounts listed on the **Regulated Substances List** enclosed in the compliance package.
- Our Division prefers that **PRESSURIZED GASES** (including liquefied gases) be disclosed in cubic feet (Field #221) on Form 2731 at standard temperature and pressure. However, if the gas is a **REGULATED SUBSTANCE** (see below), it must be reported in pounds.

Regulated Substance Registration Form

- If your **PURE** chemicals in your chemical inventory are NOT LISTED or NO NOT EXCEED the Threshold Quantity (TQ) amounts listed on the **Regulated Substances Lists** enclosed in the compliance packaged, DO NOT complete the Regulated

Substance Registration form also enclosed in the compliance packaged.

- If the **COMPONENTS** of your **MIXTURES** or **WASTES** in your chemical inventory are NOT LISTED or DO NOT EXCEED the Threshold Quantity (TQ) amounts listed on **the Regulated Substance List** enclosed in the compliance package, DO NOT complete the Regulated Substance Registration form also enclosed in the compliance packaged.

CHAPTER 3

CALIFORNIA ACCIDENTAL RELEASE PREVENTION PROGRAM (Cal-ARP)

CALIFORNIA ACCIDENT RELEASE PREVENTION PROGRAM (Cal-ARP)

The California Accident Release Prevention (CalARP) program's main objective is to prevent accidental releases to ambient air of those regulated substances (RS) determined to potentially pose the greatest risk of immediate harm to the public and the environment. The planning activities required by the program are intended to minimize the possibility of an accidental release by encouraging engineering and administrative controls.¹ It is further intended to mitigate the effects of an accidental release, by requiring owners or operators of facilities to develop and implement an accident prevention program. Subsequently, the owner or operator may be required to develop and submit a risk management plan (RMP) to the administering agency

The Cal-ARP program encompasses both the federal "Risk Management Program", established in the Code of Federal Regulations, Title 40, Part 68, and the State of California program, in accordance with the California Health and Safety Code, Chapter 6.95, Article 2.

Selected Definitions in the CalARP Program:

Administering Agency – Is the local agency responsible to implement the Cal-ARP Program. The local agency can either be a Certified Unified Program Agency (CUPA) or a Participating Agency (PA), depending on where the facility is located (See the list of CUPAs and PA). In most instances in Los Angeles County area, the administering agency is the Los Angeles County Fire Department.

Owner or operator – any person who owns, leases, operates, controls, or supervises a stationary source.²

Person – an individual, corporation, partnership, association, state, municipality, political subdivision of state, and any agency, department, or instrumentality of the United States and any officer, agency, or employee thereof.³

¹ OES CalARP Implementing Agency Guidance

² USEPA Guidance Document for Risk Management

³ California Code of Regulations, Title 19, Section 2735.3

Regulated Substance – any substance listed in California Code of Regulations, Title 19, Section 2770.5. The regulated substance list is found in Appendix C

Risk Management Plan (RMP) – a document that must be a true and accurate reflection of a facility’s compliance with all of the risk reduction elements of the Cal-ARP program.⁴ It includes the implementation aspects of accidental release prevention program for that facility.

Stationary source – any buildings, structures, equipment, installations, or substance emitting stationary activities which belongs to the same industrial group, which are located on one or more contiguous properties, which are under a control of the same person, and from which an accidental release may occur.⁵

Who is covered under the Cal-ARP Program?

Any owner or operator of a stationary source that has more than a threshold quantity of a regulated substance (RS) in a process would be covered under Cal-ARP Program. (See Appendix C).

What is considered a process?

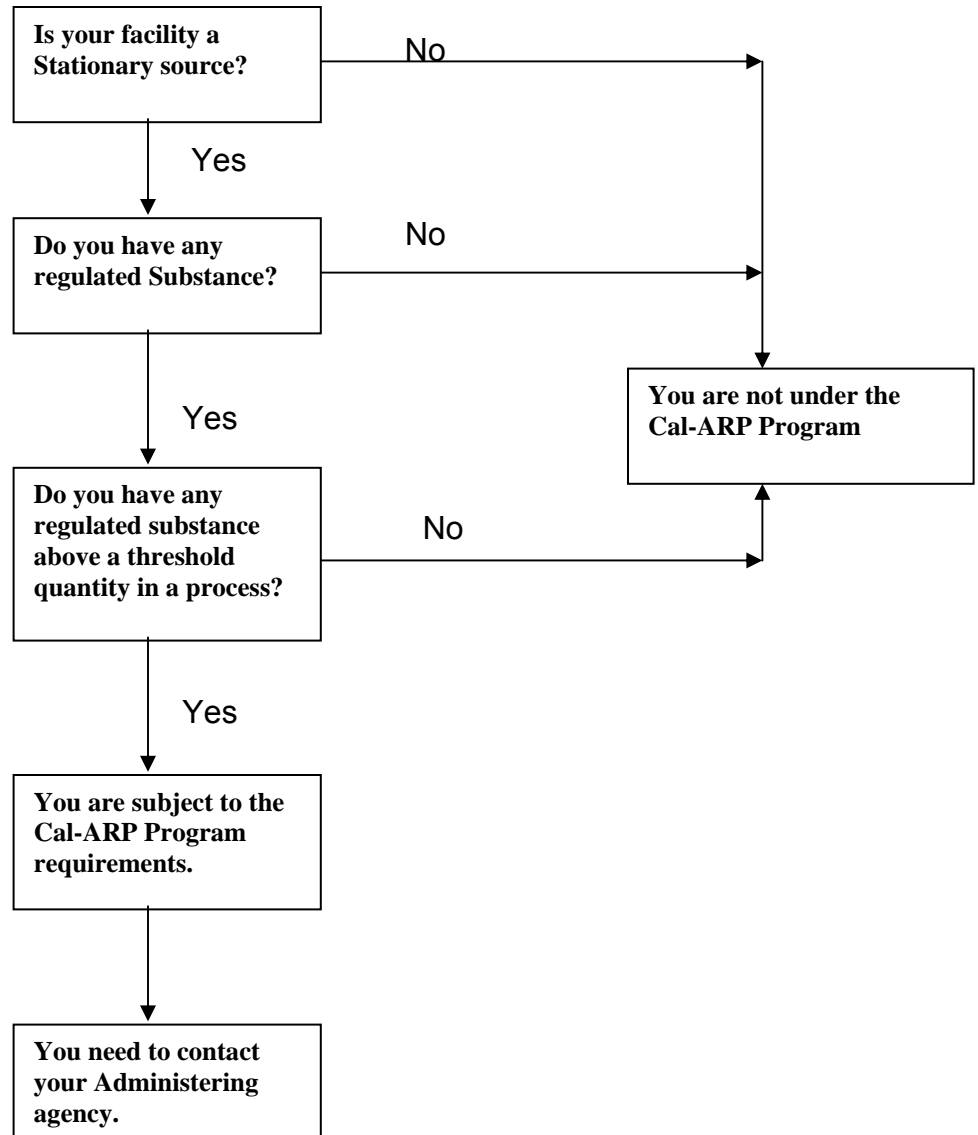
Process means any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances, or combination of these activities. A process can involve one or more storage containers, tank farms, plating tanks, reactor vessels, distillation columns, receivers, pumps, waste treatment process, etc.

⁴ OES CalARP Implementing Agency Guidance

⁵ California Code of Regulations, Title 19, Section 2735.3

Exhibit 1

How to Identify Covered Process



Once it is determined the process is under Cal-ARP program, what's the next step?

Owners or operators of stationary source must submit a Regulated Substance Registration form that is found in the Unified Program Forms, to this department. The Unified Program Forms are available online at <http://lacofd.org/hhazmat.htm>.

If the RS exceeds the quantity in Table 1 or Table 2, the facility is subject to Federal ARP requirements and must submit a copy of the RMP to USEPA. In addition, the facility must provide a copy of the RMP, with a completed RS registration to the administering agency.

However, if a facility has an RS that exceeds the quantity in Table 3 but less than Table 1, the facility may be required to submit an RMP along with RS registration to the administering agency.⁶ The administering agency will make a preliminary determination as to whether the handling of an RS has significant likelihood to pose an accident risk. If the administering agency finds an RMP is required, the owner or operator of a facility would work closely with administering agency to determine the appropriate level of documentation required for an RMP.

Three Program Levels:

The regulations define three program levels depending upon the complexity, accident history, and potential offsite consequence of covered processes. Each process is assigned to a program level, which indicates the risk management measures necessary to comply with the regulation for that process, not the facility as a whole.⁷

- ✓ **Program Level 1** covers processes that pose comparatively low risks to the public, with no public receptors within the distance to an endpoint from a worst-case release scenario. In addition, the facility must not have had a release of the RS from the process during the past five years.

- ✓ **Program Level 3** typically covers the more complex chemical processes. The process is subject to the OSHA Process Safety Management (PSM) standard, or the stationary source has an accident history, or the process is in Standard Industrial Classification (SIC) Codes 2611, 2812, 2812, 2819, 2865, 2869, 2873, 2879, or 2911. Program Level 3 processes are primarily

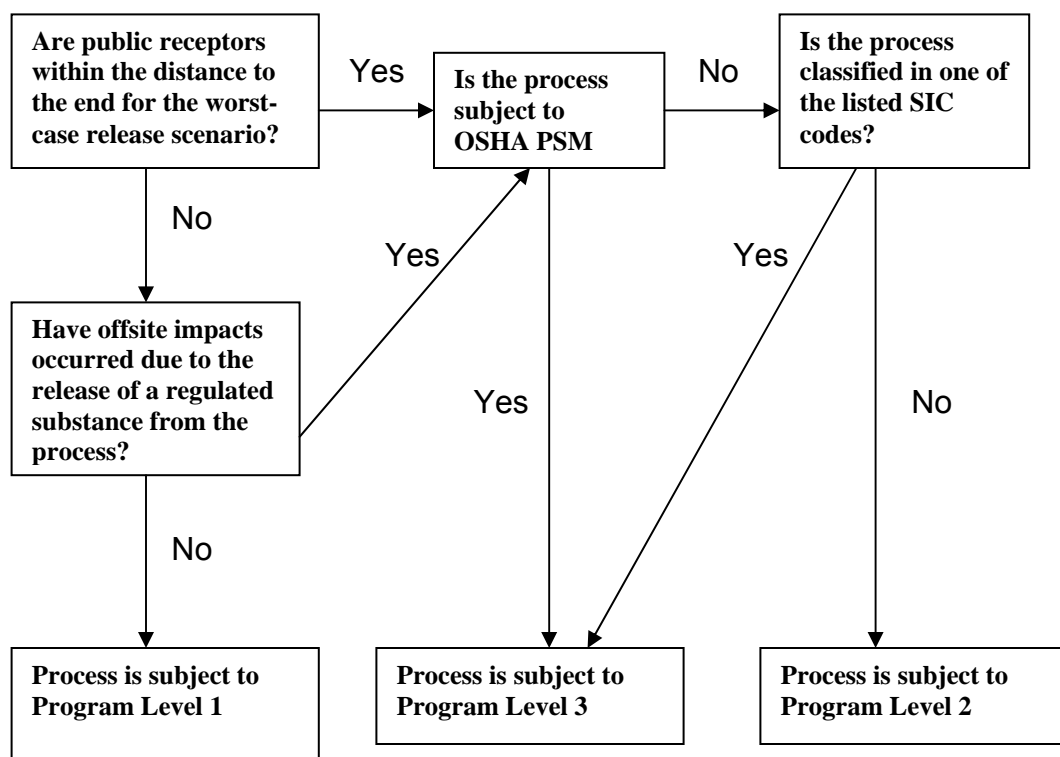
⁶ OES Cal-ARP Implementing Agency Guidance

⁷ USEPA Guidance Document for Risk Management Programs

located at medium to large manufacturing facilities, petroleum refineries, facilities with large refrigeration systems, utilities, and publicly owned drinking water or wastewater treatment plants,⁸ refineries, facilities with large refrigeration systems, utilities, and publicly owned drinking water or wastewater treatment plants.⁹

- ✓ **Program Level 2** covers processes that do not meet the Program Level 1 and Program Level 3 requirements. The processes typically have less complex processes than program Level 3.

Program Level Assignment



Once the program level is identified, determine the level of documentation required in the RMP. The five-year accident history and the worst-case release scenario are required, regardless of the program levels of the processes involved. Furthermore, only one RMP needs to be submitted for all the processes. Requirements for each program level are summarized as follow:

⁸ OES Cal-ARP Implementing Agency Guidance

⁹ OES Cal-ARP Implementing Agency Guidance

PROGRAM REQUIREMENTS

Program 1	Program 2	Program 3
Worst-case release analysis	Worst-case release analysis	Worst-case release analysis
	Alternative release analysis	Alternative release analysis
5-year accident history	5-year accident history	5-year accident history
	Document management system	Document management system
Prevention Program		
Certify no additional prevention steps needed	Safety Information	Process Safety Information
	Hazard Review	Process Hazard Analysis
	Operating Procedures	Operating Procedures
	Training	Training
	Maintenance	Mechanical Integrity
	Incident Investigation	Incident Investigation
	Compliance Audit	Compliance Audit
		Management of Change
		Pre-Startup Review
		Contractors
		Employee Participation
		Hot Work Permits

EMERGENCY RESPONSE PROGRAM

Coordinate with local Emergency responders	Develop plan and program (if applicable) and coordinate with local emergency responders	Develop plan and program (if applicable) and coordinate with local emergency responders
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The following table¹⁰ serves as a guide on submission requirements:

Over Table 1 or 2 Threshold Quantity	Over Table 3 Threshold Quantity	Type of Facility	Submission To:	Timeframe
Yes	Yes or No	Existing	USEPA and AA	RMP was due by 6/21/99. If RMP was not submitted, the facility is out of compliance.
Yes	Yes or No	New or Modified	USEPA and AA	Before the threshold quantity of the chemical is in the process.
No	Yes	Updates	AA only	12-36 months after the AA determines an RMP is required
No	Yes	New or Modified	AA only	Before the threshold quantity of the chemical is <u>used</u> in the process

¹⁰ OES CalARP Implementing Agency Guidance

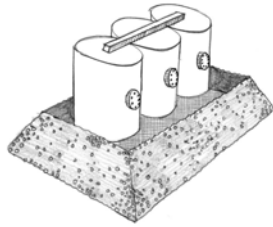
Components in RMPs are extensively discussed in USEPA Guidance Document for Risk Management Program. The following resources are tools how to develop and implement the RMP:

Federal Code of Regulations, Title 40, Part 68	http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr68_00.html
California Health and Safety Code, Sections 25531-25543.3	http://www.leginfo.ca.gov
California Code of Regulations, Title 19, Sections 2735.1-2785.1	http://www.calregs.com
USEPA Guidance Document	http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/EPAguidance.htm
Governor's Office of Emergency Services	http://www.oes.ca.gov/Operational/OESHome.nsf/OpenForm

CHAPTER 4

ABOVEGROUND PETROLEUM STORAGE TANKS

|



APSA
HSC 25270-25270.13

SPCC Requirements
40 CFR 112

ABOVEGROUND STORAGE TANK PROGRAM

The Aboveground Storage Tank (AST) Program is regulated by the California Aboveground Petroleum Storage Act (APSA) and is currently enforced, and administered by the CUPA to the extent provided by Chapter 6.67 and Sections 25270-25270.13 of the California Health and Safety Code. The local CUPA also has the authority to verify whether AST facilities are in compliance with the Federal Spill Prevention Control and Countermeasure Plan requirements. This authority became effective on January 1, 2008 with the passage of AB1130 amending the APSA. Prior to the passage of this law, the State Water Resource Control Board and the Regional Water Quality Control Board administered this program.

Aboveground Petroleum Storage Act

APSA was enacted in 1990 and later amended on October 13, 2007, in response to petroleum spills and releases from aboveground tanks and associated piping. The APSA was enacted in direct response to the 1988 spill of 400,000 gallons from the Shell Oil Refinery in the City of Martinez. The goal of the AST Program is to protect navigable waters from the damaging effects of petroleum releases by ensuring the safe operation of aboveground petroleum storage facilities. The APSA refers to federal oil pollution prevention regulations.

Facilities Subject to the AST Program

The AST Program applies to aboveground storage facilities containing petroleum subject to Spill Prevention, Control and Countermeasure (SPCC) requirements specified in Part 112 of Title 40 of the Federal Code of Regulations.

A facility is subject to the AST Program if it meets all the following criteria:

- The facility stores petroleum-based products that are liquids at 60°F and 14.7 psi. Some examples include aviation and automotive fuels, lubricating oils, heating oils, and some solvents. Biofuels that contain E85, B20 and B99 are also included. The above definition of petroleum-based product does not include propane.
- The cumulative aboveground storage capacity of petroleum-based products at the facility is greater than 1,320 gallons. However, only ASTs or containers of oil with a capacity of 55 gallons or greater are counted. The aboveground storage capacity of a facility does not include the capacity of containers

that is designated as “permanently closed., completely buried tanks or storage containers used exclusively for waste water treatment.” Also, the 1,320-gallon threshold applies to storage capacity contained in operating equipment as well as to storage capacity in containers.

- The facility could reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines during a release incident. It is the SWRCB’s general position that all petroleum AST facilities in California that meet the 1320-gallon threshold requirement have a reasonable probability of discharging into the navigable waters of the state. The US EPA concurs with this determination.

AST Program Requirements

Notification

On or before January 1, 2009 and annually thereafter, owners and operators of petroleum AST facilities with a cumulative storage capacity of greater than 10,000 gallons must file a tank facility statement with the CUPA with the following information:

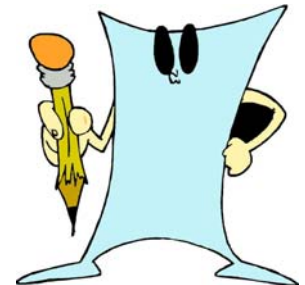
- Name and address of tank facility
- Name of a designated contact person for the facility
- The total storage capacity of the tank facility
- For each tank that exceeds 10,000 gallons in capacity and which holds substances containing at least five percent petroleum, the following information has to be documented:
 - Location (on facility)
 - Size (in gallons)
 - Age (in years)
 - Contents (type of petroleum product)

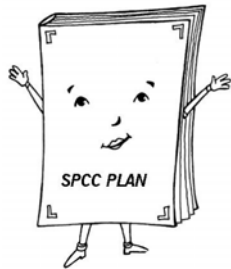
Most AST facilities that are subject to the AST program (i.e., store more than 10,000 gallons of petroleum based products) must prepare and implement an SPCC Plan in accordance with the oil pollution prevention guidelines contained in Part 112 of Title 40 of the Code of Federal Regulations. These plans must include procedures, methods, and equipment at the facility to prevent discharges of petroleum from reaching navigable waters. The SPCC Plan may be self-certified for 10,000 gallons or less aggregate oil storage capacity or professional engineer certified for more than 10,000 gallons aggregate aboveground oil storage capacity has examined the facility. Once completed, the plan must be kept at the facility.

Petroleum ASTs
Pose a Risk to
California's Navigable
Waters



Got ASTs?
You Must Notify the
SWRCB

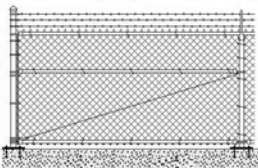




Prevent Oil Spills



AST Facilities should
Be Secured



Spill Prevention, Control and Countermeasure Plan

The SPCC Plan must include:

- Name and correspondence address of the person responsible for the facility
- Facility location
- Spill prevention information
 - Name and title of person accountable for spill prevention
 - List of possible equipment failure sources and types of failures to be expected
 - Predicted rate and direction of spill flow
 - Spill prevention procedures developed for facility
 - Documentation of personnel training in spill prevention, pollution control, and other pertinent training
- Facility drainage information
 - Procedures to remove water and rainwater without subsequent contamination by oil
 - Drainage for assessing water quality of water released from diked areas and discharged to storm drains or watercourses, if applicable.
- Bulk storage tank information
 - Description of tank materials and design
 - Secondary containment design
 - Tank inspection methods and record keeping practices
- Security
 - Facility fences, gates, and entrance ways managed to prevent unauthorized entry
 - Locked valves and locked pump controls to prevent tampering or accidental releases
 - Adequate lighting

The above list is just an example of what is usually addressed in SPCC Plans. Please refer to the guidelines contained in Part 112

Most Farms are Exempt
From Federal SPCC
Requirements



of Title 40 of the Code of Federal Regulations for SPCC Plan requirements applicable to your AST facility. For additional information, visit U.S. EPA Website at <http://epa.gov./oilspill/spcc.htm>

Exemptions from Spill Prevention, Control and Countermeasure Requirements

The following are exempt from SPCC requirements:

- Boilers and Pressure vessels
- Oil production tanks
- Hazardous waste tanks covered under PBR and at DTSC permitted facilities.
- Nursery & farms and logging & construction sites with:
 - Single AST capacities of less than 20,000 gallons
 - Cumulative AST capacity of less than 1000,000 gallons
- Most oil filled electrical equipment

AST Program Fees

Each year, commencing in calendar year 2010, each owner or operator of a tank facility who is subject to the requirements of 25270.6 (a) shall pay a fee to the CUPA, on or before a date specified by the CUPA (H&SC § 25270.6(b))

For additional information, visit U.S. Environmental Protection Agency's Web site at:

www.calepa.ca.gov/CUPA/Aboveground/FactSheetSPCC.pdf.
<http://www.epa.gov/oilspill/spcc.htm>.

CHAPTER 5

UNDERGROUND STORAGE TANK PROGRAM

UNDERGROUND STORAGE TANK PROGRAM

The Underground Storage Tank (UST) Program began in 1984 when the United States Congress passed the Resource Conservation and Recovery Act (RCRA). Subtitle I of this federal statute establishes the UST Program. The Code of Federal Regulation (CFR) further defines the UST requirements of RCRA. Most of the UST regulations can be found in 40CFR Part 280 and 40CFR Part 281. Federal requirements can be found on the U.S. Environmental Protection Agency's Office of Underground Storage Tanks web site: <http://www.epa.gov/oust/>.

The State of California has further defined the federal laws and regulations related to the UST Program. State law, Health and Safety Code (HSC) Division 20, Chapter 6.7, governs the UST Program, and regulates the program in the California Code of Regulations (CCR) Title 23, Division 3, Chapter 16 and Chapter 18. The State Water Resources Control Board (SWRCB) is the authorized State agency to regulate the UST Program. The HSC and CCR can be viewed on the SWRCB web site: <http://www.swrcb.ca.gov/cwphome/ust/>. Financial requirements for the cleanup of any unauthorized release or spill from the UST system can be found on the SWRCB Cleanup Fund web site: <http://www.swrcb.ca.gov/cwphome/ustcf/index.html>.

The Los Angeles County Code Title 11, Division 4, Underground Storage of Hazardous Materials, established the UST Program in Los Angeles County in 1983. Under the Los Angeles County Code, any tank which is substantially or totally beneath the surface of the ground which is used to store hazardous materials or substances is considered to be an underground storage tank. There are no exemptions provided under the Los Angeles County Code for underground storage tanks as there are in the HSC and CCR. Permitting UST facilities in the Unincorporated Los Angeles County areas and 76 cities (see attached list) is the jurisdiction of the Los Angeles County Department of Public Works (DPW), Environmental Programs Division. DPW is a Participating Agency (PA) to the Los Angeles County Certified Unified Program Agency (CUPA) or Los Angeles County Fire Department (LACoFD). The Los Angeles County Code can be found on the following website: <http://ordlink.com/codes/lacounty/> DATA/TITLE11/

UST permits (installation, modifications/addendum's, transfer of CUPA UST operating permit, closure by removal, closure in-place and temporary closure) must be initiated at the DPW Environmental Programs Division.

A. To permit the installation of new USTs, applications should include the following:

- Completed Hazardous Materials Underground Storage Permit (HMUSP) application
- Completed New Construction Plan Clearance/Addendum application;
- All fees payable to the Los Angeles County Department of Public Works (for HMUSP, pro-rated Annual Permit Maintenance Fee, and Plan Check Addendum fees);
- Completed Unified Program Forms BUSINESS, FACILITY (Form A) and TANK (Form B);
- Completed Certification of Financial Responsibility form;
- Work plan to perform enhanced leak detection or other approved method;
- Monitoring proposal/response plan;
- At least 4 sets of plans need to be submitted. Submitted plans should include the following:
 - Site plan to scale depicting the tank(s) and fill and piping sumps, type of hazardous material to be stored, piping layout (product/waste, vapor recovery (gasoline), tank vent, remote fill) and dispensers (if any), location of monitoring system panel, audible/visual alarms (if any), building structures, streets (and cross street), utilities, and north arrow;
 - A detailed part list which includes the manufacturer name, model number, and third party approval of equipment to be installed. The parts list shall include (but not be limited to):
 - ◆ Double-walled tank, size and product to be stored;
 - ◆ Sumps (fill and piping);
 - ◆ Phase I Enhanced Vapor Recovery equipment (see Air Resources Board Executive Orders <http://www.arb.ca.gov/vapor/eo.htm>);
 - ◆ Spill buckets;
 - ◆ Drop tube;
 - ◆ Overfill protection device(s);
 - ◆ Double-walled piping (product, vent, vapor recovery, remote fill, flex) and sizes;
 - ◆ Penetration/bullhead fittings/test boots;
 - ◆ Turbine (for pressurized systems);

- ◆ Automatic Line Leak Detector (for pressurized systems);
 - ◆ Under dispenser containment (UDCS);
 - ◆ Monitoring panel and alarm;
 - ◆ Monitoring sensors: Tank interstitial, automatic tank gage/high level alarm (if any), fill and piping sump sensors, UDC sensors and any vapor sensors.
- Detail drawing of each: All primary and secondary containment equipment which is designed to hold hazardous materials (tanks, sumps, penetration fittings, piping, UDC) must be labeled as being product tight. Tank details should show the parts listed above at a minimum.
- All construction must conform to the requirements of the HSC and CCR as well as local fire and building and safety codes. When construction is completed, the Unified Program Tank Installation form (Form C), monitoring system certification, line test results, secondary containment testing results and results of enhanced leak detection or other approved method to satisfy requirements of the HSC must be submitted to the DPW Environmental Programs Division before the UST is put into service.
 - Permits/clearance for installations must also be obtained from the LACFD or local fire department, the DPW Building and Safety Division or local city building and safety equivalent, either the South Coast or Antelope Valley Air Quality Management Districts (AQMD), and the State Division of Occupation, Safety and Health (Cal-OSHA) Excavation Permit.

B. Modifications and/or addendum's made to the underground storage tank facility:

Modifications and/or addendum's to the underground storage tank system may be made only if permitted by the DPQ Environmental Programs Division. In general, a modification is any change to the UST's primary and/or secondary containment, including piping, under dispenser containment, fill and/or piping sumps.

To make changes to a UST system component, such as removing piping and or dispensers, generally the requirements for new tank installation apply except that vent and vapor recovery piping are not required to be double walled, enhanced leak detection is not required, and the Unified Program Facility form, Certification of Financial Responsibility, and the Hazardous Materials Underground Storage Permit application and the pro-rated Annual Maintenance fees do not need to be submitted.

C. Transfers of the Hazardous Materials Underground Storage Permit (HMUSP):

DPW Environmental Programs Division must be notified within 30 days of any change in ownership or in the event of a change of operator of an underground storage tank. When a transfers of ownership occurs, the MHUSP may be transferred to the new owner by completing the Application of Transfer, submitting the applicable fee, Unified Program Facility form, a Certification of Financial Responsibility and paying applicable fees.

D. UST closure by removal, closure in-place, and temporary closure:

Closure of an underground storage tank is permitted by the DPW Environmental Programs Division. Closure by removal of a UST, piping and/or dispensers, the closure in-place of a UST and the temporary closure of a UST must comply with the closure conditions as directed on the Closure Permit as well as meet the requirements of HSC Chapter 6.7, Section 25298, CCR Title 23, Division 3, Chapter 16, Sections 2670 through 2672, and the Los Angeles County Code. It is the policy of Los Angeles County to not allow closure in-place of a UST unless it can be demonstrated that it is not applicable to do so.

Closure permit applications shall include at a minimum:

- Site plan to scale which shows the tanks, piping, dispensers, structures, property lines and overhead and underground utilities;
- Completed Unified Program Forms (FACILITY (Form A) and TANK (Form B)).

DPW authorization to remove, close in-place or temporary close USTs is only valid for 180 days. Closure by removal or in-place requires a closure report to be submitted within 30 days of

completing closure-related activities. A closure report will include soil sampling results, plot plan to scale of sampling points, a description of the method of obtaining, handling, and/or transporting soil samples, completed and signed chain of custody, disposal destination of USTs and evidence of legal disposal, analysis date, methods of extraction, and methods of analysis, documentation as the depth manifests, which document hazardous waste disposal of, removed piping, soil, and tank rinsate, and the report must be prepared under the direction of a California registered geologist, or Civil Engineer. Soil samples are required under each tank, every 20 feet of piping and under each dispenser or remote fill. For USTs containing petroleum hydrocarbons, soil sampling analysis must meet at a minimum the California Regional Water Quality Control Board Los Angeles Region requirements of June 5, 2000 http://www.swrcb.ca.gov/rwqcb4/docs/lab_req_6-00.doc

Permits/clearance for closure must also be obtained from the LACoFD or local fire department, the DPW Building and Safety Division or local city building and safety equivalent, either the South Coast (rules 1149 and 1166) or Antelope Valley AQMD, and Cal-OSHA Excavation Permit.

For questions regarding the underground storage tank program you may contact.

County of Los Angeles
Department of Public Works
Environmental Programs Division
900 South Fremont Avenue
Annex 3rd Floor
Alhambra, CA 91803-1331
Phone No. 626-458-3517
Fax No. 626-458-3569

JURISDICTION FOR WHICH THE UNDERGROUND STORAGE TANK PROGRAM (UST) IS ADMINISTERED BY LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS, ENVIRONMENTAL PROGRAMS DIVISION

UNINCORPORATED LA COUNTY	GARDENA	NORWALK
AGOURA HILLS	GLENDORA	PALMDALE
ALHAMBRA	HAWAIIAN GARDENS	PALOS VERDES ESTATES
ARCADIA	HAWTHORNE	PARAMOUNT
ARTESIA	HERMOSA BEACH	PICO RIVERA
AVALON	HIDDEN HILLS	POMONA
AZUSA	HUNTINGTON PARK	RANCHO PALOS VERDES
BALDWIN PARK	CITY OF INDUSTRY	REDONDO BEACH
BELL	INGLEWOOD	ROLLING HILLS
BELL GARDENS	IRWINDALE	ROLLING HILLS ESTATES
BELLFLOWER	LA CANADA FLINTRIDGE	ROSEMEAD
BEVERLY HILLS	LA HABRA HEIGHTS	SAN DIMAS
BRADBURY	LA MIRADA	SAN GABRIEL
CALABASAS	LA PUENTE	SAN MARINO
CARSON	LA VERNE	SANTA CLARITA
CERRITOS	LAKEWOOD	SIERRRA MADREE
CLAREMONT	LANCASTER	SOUTH EL MONTE
COMMERCE	LAWNDALE	SOUTH GATE
COMPTON	LOMITA	SOUTH PASADENA
COVINA	LYNWOOD	TEMPLE CITY
CUDAHY	MALIBU	WALNUT
CULVER CITY	MANHATTAN BEACH	WEST COVINA
DIAMOND BAR	MAYWOOD	WEST HOLLYWOOD
DOWNEY	MONROVIA	WESTLAKE VILLAGE
DUARTE	MONTEBELLO	WHITTIER
EL MONTE	MONTEREY PARK	

CHAPTER 6

SITE REMEDIATION OVERSIGHT PROGRAM

SITE REMEDIATION OVERSIGHT PROGRAM

The Site Mitigation Unit (SMU) of the Health Hazardous Materials Division, Los Angeles County Fire Department provides corrective action and voluntary oversight for remediation of contaminated sites and approval of closure plans within the jurisdiction of the Los Angeles County Unified Program Agency (LACoCUPA). This service is provided to ensure protection of public health and the environment and to facilitate completion of site a business and/or property owner intending to obtain site closure with agency oversight in the LACoCUPA jurisdiction: Regional Water Quality Control Board (RWQCB) and the Department of Toxic Substances Control (DTSC). Outside of LACoCUPA, this service may be provided by the Cities of Glendale, Santa Fe Springs, El Segundo, Long Beach and Vernon.

SITE ASSESSMENT/REMEDiation OVERSIGHT AUTHORITY

California Health and Safety Code, Section 101480 et seq. and the Los Angeles County Code Title 12, Chapter 12.60 gives authority to Los Angeles County Fire Department to provide voluntary oversight for the assessment and remediation of hazardous materials releases and to recover costs from responsible parties (RPs). The Department of Toxic Substances Control (DTSC) amended California Code of Regulations (CCR) Title 22 Chapter 45, §67450.7 and adopted Title 22, Chapter 50, §68400.11-.16 in August 2006, to delegate Corrective Action (CA) authority to the Certified Unified Program Agencies (CUPA). DTSC has determined that Los Angeles County CUPA is qualified at the Tier 2 level (highest Tier) to implement and enforce environmental assessment and corrective action conducted pursuant to Health and Safety Code, §25200.3©(3), 25187, 25187.1, 25200.10, and 2500.14 and in accordance with the requirement of CCR Title 22, §68400.11 et seq. Pursuant to CA authority, Los Angeles County CUPA is qualified to:

- Inspect permit-by-rule facilities
- Review phase I environmental assessments
- Enforce compliance with phase I requirements
- Issue an order for corrective action
- Implement and enforce corrective action at applicable sites

The SMU staff is involved with oversight of site assessment and remediation work.

SITES SUBJECT TO SITE REMEDIATION OVERSIGHT PROGRAM

The owner or responsible party of any real estate property wishing agency oversight and approval of contaminated site remediation and a final closure report may voluntarily request such by submitting an appropriate request, fee and existing site investigation reports.

OVERSITE FEES

An initial fee of \$1974.00 and an hourly rate of \$131.58 (July 1, 2007) are charged to the RP to recover the SMU review of site assessment and remediation activities, as approved by the County Auditor Controller (12.60.050). Hourly charges begin upon assignment of the case to an SMU project officer.

DOCUMENTATION/REPORTS

The documentation necessary for submittals must generally conform to DTSC's "Preliminary Endangerment Assessment Guidance Manual' (PEA). If groundwater resources are potentially threatened, as determined by SMU, assessment and remediation must also generally conform to the RWQCB's "Interim Site Assessment and Cleanup Guidebook". Other Cal-EPA or United States Environmental Protection Agency Superfund guidance documents should also be considered as a performance standard.

TO INITIATE SITE REMEDIATION OVERSIGHT, SUBMIT THE FOLLOWING:

1. Written requests for oversight, signed by the responsible party, indicating willingness to enter into SMU cost recovery program. Property owner information, responsible party information, and Assessor Identification number for the property must be included in the letter.
2. A check for \$1974.00
3. A copy of all existing site investigation reports.

If you have any questions or require any additional information, please contact the Site Mitigation Unit at (323) 890-4106 or (323) 890-4045.

**APPENDIX A
CUPA'S IN LOS ANGELES COUNTY**

El Segundo Fire Department
314 Main Street
El Segundo, CA 90245
(310) 524-2242

Glendale Fire Department
780 Flower Street
Glendale, CA 91201
(818) 548-4030

**Long Beach/Signal Hill JPA
Long Beach Health Department**
2525 Grand Avenue
Long Beach, CA 90815
(562) 570-4128

Vernon Environmental Health
4305 Santa Fe Avenue
Vernon, CA 90058
(323) 583-8811

Santa Fe Springs Fire Department
11300 Greenstone Avenue
El Segundo, CA 90245
Santa Fe Springs, CA 90670
562) 944-9713

Los Angeles City Fire Department
200 N. Main St., Rm. 970
Los Angeles, CA 90012
(818) 548-4030
(213) 485-8080

City of Santa Monica Environmental Programs
200 Santa Monica Pier #1
Santa Monica, CA 90401
(310) 458-8228

**Los Angeles County Fire Department
Health Hazardous Materials Division**
5825 Rickenbacker Road
Commerce, CA 90040
(323) 890-4045

APPENDIX B

LOS ANGELES COUNTY CUPA PARTICIPATING AGENCIES

Alhambra Fire Department

301 N. First Street
Alhambra, CA 91801
Tel: (626) 570-3234
FAX: (626) 457-8961

Programs

Haz Materials Program
Cal-ARP Program

Burbank Fire Department

311 E. Orange Grove Ave
Burbank, CA 91502
Burbank, CA 91502
Tel: (818) 238-3384
FAX: (818) 238-3479

Programs

Haz Materials Program
Cal-ARP Program
UST Program

Compton Fire Department

201 S. Acacia
Compton, CA 90220
Tel: (310) 605-6294
FAX: (310) 632-8414

Programs

Haz Materials Program
Cal-ARP Program

Culver City Fire Department

P.O. Box 507
9770 Culver Blvd
Culver City, CA 90232-0507
Tel: (310) 253-5930
FAX: (310) 253-5824

Programs

Haz Materials Program
Cal-ARP Program

Downey Fire Department

11111 Brookshire Ave
Downey, CA 90241
Tel: (562) 904-7348
FAX: (562) 904-7270

Programs

Haz Materials Program
Cal-ARP Program

Monrovia Fire Department

141 E. Lemon Avenue
Monrovia, CA 91016
Tel: (626) 256-8110
FAX: (626) 256-8112

Programs

Haz Materials Program
Cal-ARP Program

Pasadena Fire Department
199 S. Los Robles Ave #550
Pasadena, CA 91101
TEL: (626) 744-4288
FAX: (626) 585-9164

Programs
Haz Mat Program
Cal-ARP Program
UST Program

**Redondo Beach
Fire Department**
401 S. Broadway
Redondo Beach, CA 90277
TEL: (310) 318-0663
FAX: (310) 376—3407

Programs
Haz Materials Program
Cal-ARP Program

**South Pasadena
Fire Department**
817 S. Mound Street
South Pasadena, CA 91030
Tel: (626) 403-7300
FAX: (626) 403-7301

Programs
Haz Mat Programs
Cal-ARP Program

Torrance Fire Department
3031 Torrance Blvd
Torrance, CA 90503
Tel: (310) 618-2973
FAX: (310) 781-7506

Programs
Haz Materials Program
Cal-ARP
UST

**County of Los Angeles
Agricultural Commissioner/
Weights & Measures**
12300 Lower Azusa Road
Arcadia, CA 91006
Tel: (626) 459-8892
FAX: (626) 443-6652

Programs
Haz Mat Program
For Farms & Nurseries

**Los Angeles County
Department of Public
Works, Environmental Program**
Division
900 S. Fremont Avenue
Alhambra, CA 91803-1331
Tel: (626) 458-3511
FAX: (626) 458-3569

Programs
UST Program for all jurisdictions,
except Burbank,
Pasadena and Torrance

Appendix C

Cal-ARP Program Combined¹ List of Chemicals and Threshold Quantities (TQ)

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Acetaldehyde	75-07-0		10,000	
Acetone cyanohydrin ³	75-86-5			1,000
Acetone thiosemicarbazide	1752-30-3			1,000/10,000 ⁴
Acetylene [Ethyne]	74-86-2		10,000	
Acrolein [2-Propenal]	107-02-8	5,000		500
Acrylamide	79-06-1			1,000/10,000 ⁴
Acrylonitrile [2-Propenenitrile]	107-13-1	20,000		10,000
Acrylyl chloride [2-Propenoyl chloride]	814-68-6	5,000		100
Aldicarb	116-06-3			100/10,000 ⁴
Aldrin	309-00-2			500/10,000 ⁴
Allyl alcohol [2-Propen-1-ol]	107-18-6	15,000		1,000
Allylamine [2-Propen-1-amine]	107-11-9	10,000		500
Aluminum phosphide ⁵	20859-73-8			500
Aminopterin	54-62-6			500/10,000 ⁴
Amiton oxalate	3734-97-2			100/10,000 ⁴
Ammonia (conc 1% or greater) ⁶	7664-41-7			500
Ammonia (anhydrous) ⁶	7664-41-7	10,000		500
Ammonia (conc 20% or greater) ⁶	7664-41-7	20,000		
Ammonium hydroxide (ammonia conc 1% or greater) ⁶	1336-21-6			500
Ammonium hydroxide (ammonia conc 20% or greater) ⁶	1336-21-6	20,000		
Aniline ³	62-53-3			1,000
Antimycin A	1397-94-0			1,000/10,000 ⁴
ANTU	86-88-4			500/10,000 ⁴
Arsenic pentoxide	1303-28-2			100/10,000 ⁴
Arsenous oxide	1327-53-3			100/10,000 ⁴
Arsenous trichloride	7784-34-1	15,000		500
Arsine	7784-42-1	1,000		100
Azinphos-ethyl	2642-71-9			100/10,000 ⁴
Azinphos-methyl	86-50-0			10/10,000 ⁴
Benzene, 1-(chloromethyl)-4-nitro-	100-14-1			500/10,000 ⁴
Benzeneearsonic acid	98-05-5			10/10,000 ⁴
Benzimidazole, 4,5-dichloro-2-(trifluoromethyl)-	3615-21-2			500/10,000 ⁴
Benzotrichloride ³	98-07-7			100
Bicyclo[2.2.1] heptane-2-carbonitrile, 5-chloro- 6-(((methylamino) carbonyl)oxy)Imino)-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-.	15271-41-7			500/10,000 ⁴
Bis(Chloromethyl) ketone	534-07-6			10/10,000 ⁴
Bitoscanate	4044-65-9			500/10,000 ⁴
Boron trichloride [Borane, trichloro-]	10294-34-5	5,000		500
Boron trifluoride [Borane, trifluoro-]	7637-07-2	5,000		500

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Boron trifluoride compound with methyl ether (1:1) [Boron, trifluoro [oxybis[metane]]]-, T-4-	353-42-4	15,000		1,000
Bromadiolone	28772-56-7			100/10,000 ⁴
Bromine	7726-95-6	10,000		500
Bromotrifluoroethylene [Ethene, bromotrifluoro-]	598-73-2		10,000	
1,3-Butadiene	106-99-0		10,000	
Butane	106-97-8		10,000	
1-Butene	106-98-9		10,000	
2-Butene	107-01-7		10,000	
Butene	25167-67-3		10,000	
2-Butene-cis	590-18-1		10,000	
2-Butene-trans [2-Butene, (E)]	624-64-6		10,000	
Cadmium oxide	1306-19-0			100/10,000 ⁴
Cadmium stearate	2223-93-0			1,000/10,000 ⁴
Calcium arsenate	7778-44-1			500/10,000 ⁴
Camphechlor	8001-35-2			500/10,000 ⁴
Cantharidin	56-25-7			100/10,000 ⁴
Carbachol chloride	51-83-2			500/10,000 ⁴
Carbamic acid, methyl-,o-(((2,4-dimethyl-1,3-dithiolan-2-yl)methylene) amino)-.	26419-73-8			100/10,000 ⁴
Carbofuran	1563-66-2			10/10,000 ⁴
Carbon disulfide	75-15-0	20,000		10,000
Carbon oxysulfide [Carbon oxide sulfide (COS)]	463-58-1		10,000	
Chlorine	7782-50-5	2,500		100
Chlorine dioxide [Chlorine oxide (ClO ₂)]	10049-04-4	1,000		
Chlorine monoxide [Chlorine oxide]	7791-21-1		10,000	
Chlormequat chloride	999-81-5			100/10,000 ⁴
Chloroacetic acid	79-11-8			100/10,000 ⁴
Chloroform [Methane, trichloro-]	67-66-3	20,000		10,000
Chloromethyl ether [Methane, oxybis[chloro-]]	542-88-1	1,000		100
Chloromethyl methyl ether [Methane, chloromethoxy-]	107-30-2	5,000		100
Chlorophacinone	3691-35-8			100/10,000 ⁴
1-Chloropropylene [1-Propene, 1-chloro-]	590-21-6		10,000	
2-Chloropropylene [1-Propene, 2-chloro-]	557-98-2		10,000	
Chloroxuron	1982-47-4			500/10,000 ⁴
Chromic chloride	10025-73-7			1/10,000 ⁴
Cobalt carbonyl	10210-68-1			10/10,000 ⁴
Cobalt, ((2,2'-(1,2-ethanediylbis (nitrilomethylidyne)) bis(6-fluorophenolato))(2-)-N,N',O,O')-.	62207-76-5			100/10,000 ⁴
Colchicine	64-86-8			
Coumaphos	56-72-4			100/10,000 ⁴
Coumatetralyl	5836-29-3			500/10,000 ⁴
Cresol, o-	95-48-7			1,000/10,000 ⁴
Crimidine	535-89-7			100/10,000 ⁴

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2² TQs in (lbs)	Table 3 TQs in (lbs)
Crotonaldehyde [2-Butenal]	4170-30-3	20,000		1,000
Crotonaldehyde, (E)- [2-Butenal, (E)-]	123-73-9	20,000		1,000
Cyanogen bromide	506-68-3			500/10,000 ⁴
Cyanogen iodide	506-78-5			1,000/10,000 ⁴
Cyanogen [Ethanedinitrile]	460-19-5		10,000	
Cyanogen chloride	506-77-4	10,000		
Cyanuric fluoride	675-14-9			100
Cycloheximide	66-81-9			100/10,000 ⁴
Cyclohexylamine [Cyclohexanamine]	108-91-8	15,000		10,000
Cyclopropane	75-19-4		10,000	
Decaborane(14)	17702-41-9			500/10,000 ⁴
Dialifor	10311-84-9			100/10,000 ⁴
Diborane	19287-45-7	2,500		100
Dichlorosilane [Silane, dichloro-]	4109-96-0		10,000	
Diepoxybutane ³	1464-53-5			500
Difluoroethane [Ethane, 1,1-difluoro-]	75-37-6		10,000	
Digitoxin	71-63-6			100/10,000 ⁴
Digoxin	20830-75-5			10/10,000 ⁴
Dimethoate	60-51-5			500/10,000 ⁴
Dimethylamine [Methanamine, N-methyl-]	124-40-3		10,000	
Dimethyldichlorosilane [Silane, dichlorodimethyl-]	75-78-5	5,000		500
1,1-Dimethylhydrazine Hydrazine, 1,1-dimethyl-]	57-14-7	15,000		1,000
Dimethyl-p-phenylenediamine	99-98-9			10/10,000 ⁴
Dimethyl sulfate ³	77-78-1			500
2,2-Dimethylpropane [Propane, 2,2-dimethyl-]	463-82-1		10,000	
Dimetilan	644-64-4			500/10,000 ⁴
Dinitrocresol	534-52-1			10/10,000 ⁴
Dinoseb	88-85-7			100/10,000 ⁴
Dinoterb	1420-07-1			500/10,000 ⁴
Diphacinone	82-66-6			10/10,000 ⁴
Disulfoton ³	298-04-4			500
Dithiazanine iodide	514-73-8			500/10,000 ⁴
Dithiobiuret	541-53-7			100/10,000 ⁴
Emetine, dihydrochloride	316-42-7			1/10,000 ⁴
Endosulfan	115-29-7			10/10,000 ⁴
Endothion	2778-04-3			500/10,000 ⁴
Endrin	72-20-8			500/10,000 ⁴
Epichlorohydrin [Oxirane, (chloromethyl)-]	106-89-8	20,000		1,000
EPN	2104-64-5			100/10,000 ⁴
Ergocalciferol	50-14-6			1,000/10,000 ⁴
Ergotamine tartrate	379-79-3			500/10,000 ⁴
Ethane	74-84-0		10,000	
Ethyl acetylene [1-Butyne]	107-00-6		10,000	
Ethylamine [Ethanamine]	75-04-7		10,000	
Ethyl chloride [Ethane, chloro-]	75-00-3		10,000	
Ethylene [Ethene]	74-85-1		10,000	
Ethylenediamine [1,2-Ethanediamine]	107-15-3	20,000		10,000
Ethylene fluorohydrin	371-62-0			10

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Ethyleneimine [Aziridine]	151-56-4	10,000		500
Ethylene oxide [Oxirane]	75-21-8	10,000		1,000
Ethyl ether [Ethane, 1,1'-oxybis-]	60-29-7		10,000	
Ethyl mercaptan [Ethanethiol]	75-08-1		10,000	
Ethyl nitrite [Nitrous acid ethyl ester]	109-95-5		10,000	
Fenamiphos	22224-92-6			10/10,000 ⁴
Fluometil	4301-50-2			100/10,000 ⁴
Fluorine	7782-41-4	1,000		500
Fluoroacetamide	640-19-7			100/10,000 ⁴
Fluoroacetic acid	144-49-0			10/10,000 ⁴
Fluoroacetyl chloride	359-06-8			10
Fluorouracil	51-21-8			500/10,000 ⁴
Formaldehyde (including solutions) ⁶	50-00-0	15,000		500
Formetanate hydrochloride	23422-53-9			500/10,000 ⁴
Formparanate	17702-57-7			100/10,000 ⁴
Fuberidazole	3878-19-1			100/10,000 ⁴
Furan	110-00-9	5,000		500
Gallium trichloride	13450-90-3			500/10,000 ⁴
Hydrazine	302-01-2	15,000		1,000
Hydrochloric acid (conc 37% or greater)	7647-01-0	15,000		
Hydrocyanic acid	74-90-8	2,500		100
Hydrogen chloride (gas / anhydrous)	7647-01-0	5,000		500
Hydrogen fluoride	7664-39-3	1,000		100
Hydrofluoric acid (conc 1% or greater) ⁶	7664-39-3			100
Hydrofluoric acid (conc 50% or greater)	7664-39-3	1,000		
Hydrogen selenide	7783-07-5	500		10
Hydrogen	1333-74-0		10,000	
Hydrogen sulfide	7783-06-4	10,000		500
Hydroquinone ⁷	123-31-9			500/10,000 ⁴
Iron, pentacarbonyl- [Iron carbonyl (Fe(CO) ₅), (TB-5-11)-]	13463-40-6	2,500		100
Isobenzan	297-78-9			100/10,000 ⁴
Isobutane [Propane, 2-methyl]	75-28-5		10,000	
Isobutyronitrile [Propanenitrile, 2-methyl-]	78-82-0	20,000		1,000
Isocyanic acid, 3,4-dichlorophenyl ester	102-36-3			500/10,000 ⁴
Isodrin	465-73-6			100/10,000 ⁴
Isopentane [Butane, 2-methyl-]	78-78-4		10,000	
Isophorone diisocyanate	4098-71-9			100
Isoprene [1,3-Butadiene, 2-methyl-]	78-79-5		10,000	
Isopropylamine [2-Propanamine]	75-31-0		10,000	
Isopropyl chloride [Propane, 2-chloro-]	75-29-6		10,000	
Isopropyl chloroformate [Carbonyl chloridic acid, 1-methylethyl ester]	108-23-6	15,000		1,000
Leptophos	21609-90-5			500/10,000 ⁴
Lewisite ³	541-25-3			10
Lindane	58-89-9			1,000/10,000 ⁴
Lithium hydride ⁵	7580-67-8			100

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2² TQs in (lbs)	Table 3 TQs in (lbs)
Ethyleneimine [Aziridine]	151-56-4	10,000		500
Ethylene oxide [Oxirane]	75-21-8	10,000		1,000
Ethyl ether [Ethane, 1,1'-oxybis-]	60-29-7		10,000	
Ethyl mercaptan [Ethanethiol]	75-08-1		10,000	
Ethyl nitrite [Nitrous acid ethyl ester]	109-95-5		10,000	
Fenamiphos	22224-92-6			10/10,000 ⁴
Fluometil	4301-50-2			100/10,000 ⁴
Fluorine	7782-41-4	1,000		500
Fluoroacetamide	640-19-7			100/10,000 ⁴
Fluoroacetic acid	144-49-0			10/10,000 ⁴
Fluoroacetyl chloride	359-06-8			10
Fluorouracil	51-21-8			500/10,000 ⁴
Formaldehyde (including solutions) ⁶	50-00-0	15,000		500
Formetanate hydrochloride	23422-53-9			500/10,000 ⁴
Formparanate	17702-57-7			100/10,000 ⁴
Fuberidazole	3878-19-1			100/10,000 ⁴
Furan	110-00-9	5,000		500
Gallium trichloride	13450-90-3			500/10,000 ⁴
Hydrazine	302-01-2	15,000		1,000
Hydrochloric acid (conc 37% or greater)	7647-01-0	15,000		
Hydrocyanic acid	74-90-8	2,500		100
Hydrogen chloride (gas / anhydrous)	7647-01-0	5,000		500
Hydrogen fluoride	7664-39-3	1,000		100
Hydrofluoric acid (conc 1% or greater) ⁶	7664-39-3			100
Hydrofluoric acid (conc 50% or greater)	7664-39-3	1,000		
Hydrogen selenide	7783-07-5	500		10
Hydrogen	1333-74-0		10,000	
Hydrogen sulfide	7783-06-4	10,000		500
Hydroquinone ⁷	123-31-9			500/10,000 ⁴
Iron, pentacarbonyl- [Iron carbonyl (Fe(CO) ₅), (TB-5-11)-]	13463-40-6	2,500		100
Isobenzan	297-78-9			100/10,000 ⁴
Isobutane [Propane, 2-methyl]	75-28-5		10,000	
Isobutyronitrile [Propanenitrile, 2-methyl-]	78-82-0	20,000		1,000
Isocyanic acid, 3,4-dichlorophenyl ester	102-36-3			500/10,000 ⁴
Isodrin	465-73-6			100/10,000 ⁴
Isopentane [Butane, 2-methyl-]	78-78-4		10,000	
Isophorone diisocyanate	4098-71-9			100
Isoprene [1,3-Butadiene, 2-methyl-]	78-79-5		10,000	
Isopropylamine [2-Propanamine]	75-31-0		10,000	
Isopropyl chloride [Propane, 2-chloro-]	75-29-6		10,000	
Isopropyl chloroformate [Carbonyl chloridic acid, 1-methylethyl ester]	108-23-6	15,000		1,000
Leptophos	21609-90-5			500/10,000 ⁴
Lewisite ³	541-25-3			10
Lindane	58-89-9			1,000/10,000 ⁴
Lithium hydride ⁵	7580-67-8			100

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Malononitrile	109-77-3			500/10,000 ⁴
Manganese, tricarbonyl methylcyclopentadienyl ³	12108-13-3			100
Mechlorethamine ³	51-75-2			10
Mercuric acetate	1600-27-7			500/10,000 ⁴
Mercuric chloride	7487-94-7			500/10,000 ⁴
Mercuric oxide	21908-53-2			500/10,000 ⁴
Methacrylonitrile [2-Propenenitrile, 2-methyl-]	126-98-7	10,000		500
Methacryloyl chloride	920-46-7			100
Methacryloyloxyethyl isocyanate	30674-80-7			100
Methamidophos	10265-92-6			100/10,000 ⁴
Methane	74-82-8		10,000	
Methanesulfonyl fluoride	558-25-8			1,000
Methidathion	950-37-8			500/10,000 ⁴
Methiocarb	2032-65-7			500/10,000 ⁴
Methomyl	16752-77-5			500/10,000 ⁴
Methoxyethylmercuric acetate	151-38-2			500/10,000 ⁴
Methylamine [Methanamine]	74-89-5		10,000	
Methyl bromide	74-83-9			1,000
2-Methyl-1-butene	563-46-2		10,000	
3-Methyl-1-butene	563-45-1		10,000	
Methyl chloride [Methane, chloro-]	74-87-3	10,000		
Methyl 2-chloroacrylate	80-63-7			500
Methyl chloroformate [Carbonyl- chloridic acid, methylester]	79-22-1	5,000		500
Methyl ether [Methane, oxybis-]	115-10-6		10,000	
Methyl formate [Formic acid, methyl ester]	107-31-3		10,000	
Methyl hydrazine [Hydrazine, methyl-]	60-34-4	15,000		500
Methyl isocyanate [Methane, isocyanato-]	624-83-9	10,000		500
Methyl isothiocyanate ⁵	556-61-6			500
Methyl mercaptan [Methanethiol]	74-93-1	10,000		500
Methylmercuric Dicyanamide	502-39-6			500/10,000 ⁴
Methyl phosphonic dichloride ⁵	676-97-1			100
2-Methylpropene [1-Propene, 2-methyl-]	115-11-7		10,000	
Methyl thiocyanate [Thiocyanic acid, methyl ester]	556-64-9	20,000		10,000
Methyltrichlorosilane [Silane, trichloromethyl-]	75-79-6	5,000		500
Methyl vinyl ketone	78-94-4			10
Metolcarb	1129-41-5			100/10,000 ⁴
Mexacarbate	315-18-4			500/10,000 ⁴
Mitomycin C	50-07-7			500/10,000 ⁴
Monocrotophos	6923-22-4			10/10,000 ⁴
Muscimol	2763-96-4			500/10,000 ⁴
Mustard gas ³	505-60-2			500
Nickel carbonyl	13463-39-3	1,000		1
Nitric oxide [Nitrogen oxide (NO)]	10102-43-9	10,000		100
Nitrobenzene ³	98-95-3			10,000
Nitrogen dioxide	10102-44-0			100
Norbormide	991-42-4			100/10,000 ⁴

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2² TQs in (lbs)	Table 3 TQs in (lbs)
Oleum (Fuming H ₂ SO ₄) [Sulfuric acid, mixture with SO ₃] ³	8014-95-7	10,000		
Organorhodium complex (PMN-82-147)	MIXTURE			10/10,000 ⁴
Ouabain	630-60-4			100/10,000 ⁴
Oxamyl	23135-22-0			100/10,000 ⁴
Ozone	10028-15-6			100
Paraquat dichloride	1910-42-5			10/10,000 ⁴
Paraquat methosulfate	2074-50-2			10/10,000 ⁴
Parathion-methyl	298-00-0			100/10,000 ⁴
Paris Green	12002-03-8			500/10,000 ⁴
Pentaborane	19624-22-7			500
Pentadecylamine	2570-26-5			100/10,000 ⁴
1,3-Pentadinene	504-60-9		10,000	
Pentane	109-66-0		10,000	
1-Pentene	109-67-1		10,000	
2-Pentene, (E)-	646-04-8		10,000	
2-Pentene, (Z)-	627-20-3		10,000	
Peracetic acid [Ethaneperoxoic acid]	79-21-0	10,000		500
Perchloromethylmercaptan [Methanesulfonyl chloride, trichloro-]	594-42-3	10,000		500
Phenol	108-95-2			500/10,000 ⁴
Phenol, 2,2'-thiobis(4-chloro-6-methyl)-	4418-66-0			100/10,000 ⁴
Phenol, 3-(1-methylethyl)-, methylcarbamate	64-00-6			500/10,000 ⁴
Phenoxarsine, 10, 10' - oxydi-	58-36-6			500/10,000 ⁴
Phenyl dichloroarsine ³	696-28-6			500
Phenylhydrazine hydrochloride	59-88-1			1,000/10,000 ⁴
Phenylmercury acetate	62-38-4			500/10,000 ⁴
Phenylsilatrane	2097-19-0			100/10,000 ⁴
Phenylthiourea	103-85-5			100/10,000 ⁴
Phorate ³	298-02-2			10
Phosacetim	4104-14-7			100/10,000 ⁴
Phosfolan	947-02-4			100/10,000 ⁴
Phosgene [Carbonic dichloride]	75-44-5	500		10
Phosmet	732-11-6			10/10,000 ⁴
Phosphine	7803-51-2	5,000		500
Phosphonothioic acid, methyl-, S-(2-(bis(1-ethylethyl)amino)ethyl) O-ethyl ester. ³	50782-69-9			100
Phosphorus ⁵	7723-14-0			100
Phosphorus oxychloride [Phosphoryl chloride]	10025-87-3	5,000		500
Phosphorus pentachloride ⁵	10026-13-8			500
Phosphorus trichloride [Phosphorous trichloride]	7719-12-2	15,000		1,000
Physostigmine	57-47-6			100/10,000 ⁴
Physostigmine, salicylate (1:1)	57-64-7			100/10,000 ⁴
Picrotoxin	124-87-8			500/10,000 ⁴
Piperidine	110-89-4	15,000		1,000
Potassium arsenite	10124-50-2			500/10,000 ⁴
Potassium cyanide ⁵	151-50-8			100
Potassium silver cyanide ⁵	506-61-6			500

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Promecarb	2631-37-0			500/10,000 ⁴
Propadiene [1,2-Propadiene]	463-49-0		10,000	
Propane	74-98-6		10,000	
Propargyl bromide	106-96-7			10
Propiolactone, beta- ³	57-57-8			500
Propionitrile [Propanenitrile]	107-12-0	10,000		500
Propiophenone, 4-amino-	70-69-9			100/10,000 ⁴
Propyl chloroformate [Carbonochloridic acid, propylester]	109-61-5	15,000		500
Propylene [1-Propene]	115-07-1		10,000	
Propylene oxide [Oxirane, methyl-]	75-56-9	10,000		10,000
Propyleneimine [Aziridine, 2-methyl-]	75-55-8	10,000		10,000
Propyne [1-Propyne]	74-99-7		10,000	
Prothoate	2275-18-5			100/10,000 ⁴
Pyrene	129-00-0			1,000/10,000 ⁴
Pyridine, 4-amino-	504-24-5			500/10,000 ⁴
Pyridine, 4-nitro-, 1-oxide	1124-33-0			500/10,000 ⁴
Pyriminil	53558-25-1			100/10,000 ⁴
Salcomine	14167-18-1			500/10,000 ⁴
Sarin ³	107-44-8			10
Selenious acid	7783-00-8			1,000/10,000 ⁴
Semicarbazide hydrochloride	563-41-7			1,000/10,000 ⁴
Silane	7803-62-5		10,000	
Sodium arsenate	7631-89-2			1,000/10,000 ⁴
Sodium arsenite	7784-46-5			500/10,000 ⁴
Sodium azide (Na (N3)) ⁵	26628-22-8			500
Sodium cacodylate	124-65-2			100/10,000 ⁴
Sodium cyanide (Na (CN)) ⁵	143-33-9			100
Sodium fluoroacetate	62-74-8			10/10,000 ⁴
Sodium selenate	13410-01-0			100/10,000 ⁴
Sodium selenite	10102-18-8			100/10,000 ⁴
Sodium tellurite	10102-20-2			500/10,000 ⁴
Stannane, acetoxetriphenyl-	900-95-8			500/10,000 ⁴
Strychnine	57-24-9			100/10,000 ⁴
Strychnine sulfate	60-41-3			100/10,000 ⁴
Sulfur dioxide	7446-09-5			500
Sulfur dioxide (anhydrous)	7446-09-5	5,000		
Sulfuric acid ⁸	7664-93-9			1,000
Sulfur tetrafluoride [Sulfur fluoride (SF4),(T-4)-]	7783-60-0	2,500		100
Sulfur trioxide ⁵	7446-11-9	10,000		100
Tabun ³	77-81-6			10
Tellurium hexafluoride	7783-80-4			100
Tetrafluoroethylene [Ethene, tetrafluoro-]	116-14-3		10,000	
Tetramethyllead [Plumbane, tetramethyl-]	75-74-1	10,000		100
Tetramethylsilane [Silane, tetramethyl-]	75-76-3		10,000	
Tetranitromethane [Methane tetranitro-]	509-14-8	10,000		500
Thallium sulfate	10031-59-1			100/10,000 ⁴
Thallos carbonate	6533-73-9			100/10,000 ⁴
Thallos chloride	7791-12-0			100/10,000 ⁴
Thallos malonate	2757-18-8			100/10,000 ⁴

Chemical Name	CAS Number	Table 1 TQs in (lbs)	Table 2 ² TQs in (lbs)	Table 3 TQs in (lbs)
Thallosulfate	7446-18-6			100/10,000 ⁴
Thiocarbamide	2231-57-4			1,000/10,000 ⁴
Thiofanox	39196-18-4			100/10,000 ⁴
Thiosemicarbazide	79-19-6			100/10,000 ⁴
Thiourea, (2-Chlorophenyl)-	5344-82-1			100/10,000 ⁴
Thiourea, (2-Methylphenyl)-	614-78-8			500/10,000 ⁴
Titanium tetrachloride [Titanium chloride (TiCl ₄) (T-4)-]	7550-45-0	2,500		100
Toluene 2,4-diisocyanate [Benzene, 2,4-diisocyanato-1-methyl-] ³	584-84-9	10,000		500
Toluene 2,6-diisocyanate [Benzene, 1,3-diisocyanato-2-methyl-] ³	91-08-7	10,000		100
Toluene diisocyanate (unspecified isomer) [Benzene, 1,3-diisocyanatomethyl-] ³	26471-62-5	10,000		
Triamphos	1031-47-6			500/10,000 ⁴
Trichloro(chloromethyl)silane	1558-25-4			100
Trichloro(dichlorophenyl)silane	27137-85-5			500
Trichlorosilane [Silane, trichloro-]	10025-78-2		10,000	
Triethoxysilane	998-30-1			500
Trifluorochloroethylene [Ethene, chlorotrifluoro-]	79-38-9		10,000	
Trimethylamine [Methanamine, N, N-dimethyl-]	75-50-3		10,000	
Trimethylchlorosilane [Silane, chlorotrimethyl-]	75-77-4	10,000		1,000
Trimethylolpropane phosphite	824-11-3			100/10,000 ⁴
Trimethyltin chloride	1066-45-1			500/10,000 ⁴
Triphenyltin chloride	639-58-7			500/10,000 ⁴
Tris(2-chloroethyl)amine ³	555-77-1			100
Valinomycin	2001-95-8			1,000/10,000 ⁴
Vanadium pentoxide	1314-62-1			100/10,000 ⁴
Vinyl acetate monomer [Acetic acid ethenyl ester]	108-05-4	15,000		1,000
Vinyl acetylene [1-Buten-3-yne]	689-97-4		10,000	
Vinyl chloride [Ethene, chloro-]	75-01-4		10,000	
Vinyl ethyl ether [Ethene, ethoxy-]	109-92-2		10,000	
Vinyl fluoride [Ethene, fluoro-]	75-02-5		10,000	
Vinylidene chloride [Ethene, 1, 1-dichloro-]	75-35-4		10,000	
Vinylidene fluoride [Ethene, 1, 1-difluoro-]	75-38-7		10,000	
Vinyl methyl ether [Ethene, methoxy-]	107-25-5		10,000	
Warfarin	81-81-2			500/10,000 ⁴
Warfarin sodium	129-06-6			100/10,000 ⁴
Xylylene dichloride	28347-13-9			100/10,000 ⁴
Zinc, dichloro(4,4-dimethyl-5(((methylamino) carbonyl)oxy)imino)pentanenitrile)-, (T-4)-	58270-08-9			100/10,000 ⁴
Zinc phosphide ⁵	1314-84-7			500

- 1 Consult Section 2770.5 of the CalARP Program regulations (Tables 1, 2, and 3) for the official chemical listings. Consult Sections 2770.2, 2770.4, and 2770.4.1, for specific exemptions and exclusions.
- 2 Flammable substances when used as a fuel or held for sale as a fuel at a retail facility are excluded from the CalARP Program (Section 2770.4.1).
- 3 Substances that failed the evaluation pursuant to Section 25532(g)(2) of the HSC but remain listed pursuant to potential health impacts. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.
- 4 These extremely hazardous substances are solids. These substances are regulated at the lower listed threshold if: 1) the chemical is in powdered form with a particle size of less than 100 microns; or 2) if handled in solution or in molten form; or 3) the substance has an NFPA rating for reactivity of 2, 3, or 4. If the above 3 conditions do not apply, the threshold for each of these substances is 10,000 pounds. (Note: The 10,000 pound threshold for these substances is a remnant from the former RMPP program. OES is considering initiating a regulatory change to remove the 10,000 pound thresholds, in accordance with HSC 25532(g)(2)(A)(iii).) In addition, the exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.
- 5 These extremely hazardous substances are reactive solids. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.
- 6 Appropriate synonyms or mixtures of extremely hazardous substances with the same CAS number are also regulated, e.g., formalin. The listing of ammonia includes anhydrous and aqueous forms of ammonia pursuant to Section 25532(g)(2). Consult USEPA's "CAA

Section 112 (r) Frequently Asked Questions,” April 2000, Questions II. 20 (List Rule Response to Comments, page 50, Docket A 91-74), II. 22, II. 36, and II. 37 for further discussion on ammonium hydroxide and formaldehyde.

- 7 Hydroquinone is exempt in crystalline form.

- 8 Sulfuric acid fails the evaluation pursuant to Section 25532(g)(2) of the HSC but remains listed as a Regulated Substance only under the following conditions:
 - If concentrated with greater than 100 pounds of sulfur trioxide or the acid meets the definition of oleum. (The Table 3 threshold for sulfur trioxide is 100 pounds.) (The Table 1 threshold for oleum is 10,000 pounds.)
 - If in a container with flammable hydrocarbons (flash point < 73⁰ F).

REFERRAL PHONE NUMBERS

Health Hazardous Materials Division
5825 Rickenbacker Road, Commerce, CA 90040
(323) 890-4045

Website address: <http://www.lacofd.org>

Unified Program Forms can be accessed: lacofd.org/upforms.htm

HHMD:

Complaint:	(323) 890-4089
Emergency Response Coordinator	(323) 890-4317
Investigations Unit:	(323) 890-4085
Tiered Permit Coordinator:	(310)-348-1785
Site Mitigation Section:	(323) 890-4106
Cal-ARP Unit:	(323) 890-4035

Inspection Districts:

North	(818) 363-7120
East	(626) 450-7450
South East	(562) 564-2620
Central	(323) 890-4107
West	(310) 348-1781
Southwest	(310) 534-6270

State Department of Toxic Substances Control:

Chatsworth Regional Office	(818) 717-6500
Cypress Regional Office	(714) 484-5300

Household Hazardous Waste Disposal:

LA County Department of Public Works	(818) 252-2652
LA County Sanitation District www.lacsd	(800) 238-0173
LA City Household Hazardous Waste Roundup	(800) 988-6942
City of Santa Monica	(310) 458-8255

Information on Hazardous Materials within the following cities:

Alhambra Fire Department	(626) 579-3234
Burbank Fire Department	(818) 238-3384
Compton Fire Department	(310) 605-6294
Culver City Fire Department	(310) 253-5930
Downey Fire Department	(562) 904-7348
Monrovia Fire Department	(626) 256-8110
Pasadena Fire Department	(626) 744-4288
South Pasadena Fire Department	(626) 403-7300
Torrance Fire Department	(310) 781-2973

**Hazardous waste disposal from Conditionally Exempt
Small Quantity Generators:**

Los Angeles City (213) 473-8276

**Information on Hazardous Materials Aboveground Storage
Tanks in LA County:**

Regional Water Quality Control Board (213) 576-6600

Information on Underground Storage Tanks:

Los Angeles County

Department of Public Works (626) 458-3517

Los Angeles City Fire Department (213) 482-6900

Burbank Fire Department (818) 238-3391

Pasadena Fire Department (626) 744-4115

Torrance Fire Department (310) 618-2973

South Coast Air Quality Management District:

Air Pollution Complaints (800) 288-7664

Asbestos Complaints (800) 728-6942

**LA County Health Services Department/Environmental Health
Services:**

Food Poisoning Complaints (626) 430-5400

Solid Waste (626) 430-5540

Lead Program (323) 869-7068

CONTACTS IN LOS ANGELES COUNTY

Agency Type	Agency Name	City	Phone Number	Website
LA County Agriculture Commissioners	County Agriculture Commissioner	Arcadia	(626) 575-5451	www.acwm.co.la.ca.us
Certified Unified Program Agency (CUPA)	Glendale City Fire Department	Glendale	(818) 548-4030	www.fire.ci.glendale.ca.us
	Long Beach/Signal Hill JPA	Long Beach	(562) 570-4128	www.cityofsignalhill.org
	Santa Monica City Env. Programs	Santa Monica	(310) 458-2213	www.smgov.net
	LA City fire Department	Los Angeles	(213) 485-8080	lafd.org
	Los Angeles County Fire Department	Commerce	(323) 890-4042	www.fire.lacounty.gov
	Santa Fe Springs Fire Department	Santa Fe Springs	(562) 944-9713	www.santafesprings.org/d
	Vernon City Environmental Health	Vernon	(323) 583-8811	www.cityof Vernon.org
	El Segundo City Fire Department	El Segundo	(310) 524-2242	stsumura@elsegundo.org
County Environmental Health Department				
	Vernon Health Environmental Control	Vernon	(213) 583-8811	www.cityof Vernon.org
	Pasadena Environmental Health Division	Pasadena	(626) 744-6005	www.ci.pasadena.ca.us
	Long Beach Environmental Health	Long Beach	(562) 570-4121	www.longbeach.gov/health
	Los Angeles County Environmental Health	Baldwin Park	(626) 430-5100	http://www.dhs.co.la.ca.us
LA County Public Works Department	Los Angeles County Department of Public Works	Alhambra	(626) 458-5100	http://www.dpw.co.la.ca.us
Household Hazardous Waste Division	Azusa Department of Public Works	Azusa	626-812-5244	www.ci.azusa.ca.us

Agency Type	Agency Name	City	Phone Number	Website
Public Works	City of Huntington Park	Huntington Park	(323) 584-6274	www.huntingtonpark.org
	City of Paramount	Paramount	(582) 220-2020	www.paramountcity.com
	Los Angeles Bureau of Sanitation	Los Angeles	(800) 773-2489	www.ci.la.ca.us/SAN/se
	City of La	La Puente	(626) 855-1500	www.lapuente.org

	Puente			
	Bell Gardens Department of Public Works	Bell Gardens	(562) 806-7770	www.bellgardens.org
	El Monte Public Works	El Monte	(626) 580-2250	www.ci.el-monte.ca.us
	City of Santa Clarita	Santa Clarita	(661) 255-4942	www.santa-clarita.com
	Glendale Environmental Management Control/Fire Department	Glendale	(818) 548-4030	www.ci.glendale.ca.us/fi
	City of Norwalk Public Works	Norwalk	(562) 929-5700	www.norwalkct.org/DPV
	Los Angeles County Sanitation	Whittier	(562) 699-7411	www.lacsd.org/contact
	City of Pico Rivera	Pico Rivera	(562) 801-4415	www.picorivera.org
	City of Redondo Beach	Redondo Beach	(310) 318-0686	www.redondo.org/depts _works
	Lancaster Department Of Public Works	Lancaster	(661) 723-6040	www.cityoflancaster.org
	City of Lynwood	Lynwood	(800) 238-0173	www.lynwood.ca.us
	Los Angeles Air Force Base Public Affairs	El Segundo	(310) 653-1131	www.losangeles.af.mil
	City of Compton	Compton	(310) 605-5505	www.comptoncity.org
	City of Palmdale	Palmdale	(661) 267-5300	www.cityofpalmdale.org
	Santa Monica Environmental Protection Division	Santa Monica	(310) 458-2213	www.environmental@smnet.net
	City of Maywood Fire Department	Maywood	(323) 262-2111	www.cityofMaywood.com

Agency Type	Agency name	City	Phone Number	Website
Local Air District				
	Antelope Valley Air Pollution Control District	Lancaster	(661)723-8070	http://www.avaqmd.ca.gov
	South Coast Air Quality Management District	Los Angeles	(909) 396-2000	http://www.aqmd.gov
Regional Water Quality Control Board				

	Los Angeles Regional Water Quality Control Board, Regional 4	Los Angeles	(213) 576-6600	http://www.swrcb.ca.gov
	Lahontan Regional Water Quality Control Board Region 6	Victorville	(760) 241-7308	http://www.swrcb.ca.gov

WEBSITES OF INTEREST

- Federal Register www.gpo.gov/su_docs/aces/aces140.html
- Code of Federal www.gpo.gov/hara/cfr/index.html#page1
- California Law www.leginfo.ca.gov/calaw.html
- California Code of Regulations www.calregs.com/
- Los Angeles County Code www.bpchnet.com/codes/lacounty/index.htm
- Cal-EPA www.calepa.ca.gov/
- Dept of Toxic Substances Control www.dtsc.ca.gov/index.html
- Office of Emergency Services www.oes.ca.gov/
- Air Resources Board www.arb.ca.gov/homepage.htm
- Air Quality Management District www.aqmd.gov/
- Integrated Waste Management Board www.ciwmb.ca.gov/
- Water Resources Control Board www.swrcb.ca.gov/
- Los Angeles County Public Works www.ladpw.org/epd/
- Sanitation Districts of Los Angeles County www.lacsd.org
- Department of Pesticides Regulation www.cdpr.ca.gov

- 3. Unified Form (Long Form)– (Business Plan) –
Los Angeles County Fire Department – Health
HazMat**

THE CERTIFIED UNIFIED PROGRAM AGENCIES OF LOS ANGELES COUNTY

UNIFIED PROGRAM (UP) FORM



**CITY OF EL SEGUNDO
FIRE DEPARTMENT**



**COUNTY OF LOS ANGELES
FIRE DEPARTMENT**



**CITY OF GLENDALE
FIRE DEPARTMENT**



**CITY OF SANTA FE SPRINGS
FIRE DEPARTMENT**



CITY OF LONG BEACH



**CITY OF SANTA MONICA
FIRE DEPARTMENT**



**CITY OF LOS ANGELES
FIRE DEPARTMENT**



**HEALTH DEPARTMENT
CITY OF VERNON**

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Note: The UP Form was developed by the CUPAs of Los Angeles County as an alternative version of the Unified Program Consolidated Form (UPCF). Businesses have the option to use it or the UPCF adopted in state regulations. The CUPA or Participating Agency (PA) must accept the state UPCF and cannot require a business to use the alternative version developed by the CUPA. The CUPA and PA can require businesses to provide additional information on either the UPCF or a supplemental page to that document. (Reference: 27 CCR 15400.3 (d))

WHAT IS A CUPA?

Senate Bill 1082, introduced by Senator Charles Calderon (D-Whittier) and passed in 1993, created the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program), which requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a Certified Unified Program Agency (CUPA). The Program Elements consolidated under the Unified Program are:

- ❖ Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs (a.k.a. Tiered Permitting);
- ❖ Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC);
- ❖ Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or "Community-Right-To-Know");
- ❖ California Accidental Release Prevention Program (Cal ARP);
- ❖ Underground Storage Tank Program (UST); and,
- ❖ Uniform Fire Code Plans and Inventory Requirements.

The goal of the Unified Program is to create a more cohesive, effective and efficient program. Under the Unified Program, application and required submission forms are standardized and consolidated, inspections are combined where possible, annual fees for each program element are merged into a single fee system, and enforcement procedures are made more consistent.

Local agencies administering one or more of the six Program Elements had the option to either apply for CUPA status with the California Environmental Protection Agency (Cal EPA) or retain their programs by becoming a Participating Agency (PA) under another CUPA's jurisdiction. Counties were required to apply for CUPA designation. Eight CUPAs in Los Angeles County received certification from Cal EPA to implement the CUPA program effective July 1, 1997 including the Cities of El Segundo, Glendale, Long Beach, Los Angeles, Santa Fe Springs, Santa Monica, and Vernon, and the County of Los Angeles (LA Co CUPA). The LA Co CUPA implements the Unified Program in all unincorporated and incorporated areas of the County **not** within the jurisdiction of the other seven CUPAs.

(Note: The Los Angeles County Fire Department administers Hazardous Waste Programs in the cities of Los Angeles and Santa Monica as a Participating Agency.)

Ten cities and two County agencies entered into agreements and/or Memorandum of Understanding with the Los Angeles County Fire Department to administer one or more of the Program Elements as Participating Agencies (PAs) to the LACoCUPA. The ten City agencies include the Fire Departments of Alhambra, Burbank, Compton, Culver City, Downey, Monrovia, Pasadena, Redondo Beach, South Pasadena, and Torrance. The two County Departments include the Department of Public Works and the Agricultural Commissioner.

OFFICES OF CUPAs IN LOS ANGELES COUNTY

<p>El Segundo Fire Department 314 Main Street El Segundo, CA 90245 (310) 524-2242</p>	<p>City of Santa Monica Fire Department 333 Olympic Drive, 2nd Floor Santa Monica, CA 90401 (310) 434-2666</p>	<p>North County (818) 364-7120 14425 Olive View Dr. Sylmar, CA 91342</p>
<p>Glendale Fire Department 780 Flower Street Glendale, CA 91201 (818) 548-4030</p>	<p>Vernon Environmental Health 4305 Santa Fe Avenue Vernon, CA 90058 (323) 583-8811</p>	<p>Southwest County (310) 534-6270 24330 Narbonne Ave. Lomita, CA 90717</p>
<p>Long Beach 2525 Grand Avenue Long Beach, CA 90815 (562) 570-4131</p>	<p>Los Angeles County Fire Department Health Haz Mat Division 5825 Rickenbacker Road Commerce, CA 90040 (323) 890-4045</p>	<p>East County (626) 450-7450 5110 North Peck Rd. El Monte, CA 91732</p>
<p>Los Angeles City Fire Department 200 N. Main Street, Room 1780 Los Angeles, CA 90012 (213) 978-3680</p>	<p>LA County Fire Department Offices: 5825 Rickenbacker Road Commerce, CA 90040</p>	<p>Southeast County (562) 654-2620 9155 Telegraph Rd. Pico Rivera, CA 90660</p>
<p>Santa Fe Springs Fire Department 11300 Greenstone Avenue Santa Fe Springs, CA 90670 (562) 944-9713</p>	<p>Central District (323) 890-4107 Data Unit (323) 890-4000 RMP Unit (323) 890-4035</p>	<p>West County (310) 348-1781 6167 Bristol Parkway, Ste 220 Culver City, CA 90230</p>

LOS ANGELES COUNTY CUPA - PARTICIPATING AGENCIES

ALHAMBRA FIRE DEPARTMENT

RAYMOND MOSACK Hazardous Materials Program
301 N. First Street Cal ARP Program
Alhambra, CA 91801
(626) 570-5192 / FAX (626) 457-8961
rmosack@alhambrafire.org

BURBANK FIRE DEPARTMENT

JORGE MARTINEZ Hazardous Materials Program
311 E. Orange Grove Ave Cal ARP Program
Burbank, CA 91502 UST Program
(818) 238-3384 / FAX (818) 238-3479
jmartinez@ci.burbank.ca.us

COMPTON FIRE DEPARTMENT

SHEILA HOPPER Hazardous Materials Program
201 S. Acacia Cal ARP Program
Compton, CA 90220
(310) 605-6294 / FAX (310) 632-8414
shopper@comptoncity.org

CULVER CITY FIRE DEPARTMENT

JESSE LUNA Hazardous Materials Program
9770 Culver Blvd. Cal ARP Program
Culver City, CA 90232-0507
(310) 253-5930 / FAX (310) 253-5937
jesse.luna@culvercity.org

DOWNEY FIRE DEPARTMENT

LEE KIRBY Hazardous Materials Program
11111 Brookshire Avenue Cal ARP Program
Downey, CA 90241
(562) 904-7348 / FAX (562) 904-7270
lkirby@downeyca.org

MONROVIA FIRE DEPARTMENT

CHIEF SCOTT HABERLE Hazardous Materials Program
141 E. Lemon Avenue Cal ARP Program
Monrovia, CA 91016
(626) 256-8110 / FAX (626) 256-8112
shaberle@ci.monrovia.ca.us

PASADENA FIRE DEPARTMENT

JAMES WECKERLE Hazardous Materials Program
199 S. Los Robles Av. #550 Cal ARP Program
Pasadena, CA 91101 UST Program
(626) 744-4288 / FAX (626) 585-9164
jweckerle@ci.pasadena.ca.us

REDONDO BEACH FIRE DEPARTMENT

RICK KUCIEMBA Hazardous Materials Program
401 S. Broadway Cal ARP Program
Redondo Beach, CA 90277
(310) 318-0663 Ext. 4395 / FAX (310) 376-3402
richard.kuciemba@redondo.org

TORRANCE FIRE DEPARTMENT

JOHN KULLUK Hazardous Materials Program
3031 Torrance Blvd. Cal ARP Program
Torrance, CA 90503 UST Program
(310) 618-2973 / FAX (310) 781-7506
jkulluk@torranceca.gov

COUNTY OF LOS ANGELES AGRICULTURAL COMMISSIONER/ WEIGHTS & MEASURES

Hazardous Materials Program
ARIEL VERAYO
12300 Lower Azusa Rd.
Arcadia, CA 91006
(626) 459-8894 / FAX (626) 443-6652
Averayo@acwm.lacounty.gov

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS, WASTE MANAGEMENT DIVISION

TIM SMITH UST Program
900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3511 / FAX (626) 458-3569
tsmith@dpw.lacounty.gov

NOTE: The LA Co CUPA implements the Unified Program in all unincorporated and incorporated areas of the County **not** within the jurisdiction of the seven City CUPAs. Each Participating Agency of the LA Co CUPA regulates the program listed in their jurisdictions. The Los Angeles County Department of Public Works administers the UST program in all areas of the LA County CUPA except for the cities of Burbank, Pasadena, and Torrance where the City Fire Department administers the UST program. The County of Los Angeles Agricultural Commissioner administers the Hazardous Materials program for agricultural business (farms and nurseries).

REPORTING POLICY

1. Please, use the CUPAs Of Los Angeles County Unified Program (UP) Form provided. Only information submitted on the CUPAs of Los Angeles County or State forms will be accepted.

Note: If the State of California UPCF Form is used, we may request your business to provide additional locally collected information. The Full and Short versions of the CUPAs OF LOS ANGELES COUNTY UNIFIED PROGRAM (UP) FORM and individual pages of the form are available for download at the Los Angeles County Fire Department's web site: <http://fire.lacounty.gov/HealthHazMat/HHMDForms.asp>

2. All forms may be photocopied if necessary.
3. Appropriate forms must bear an original signature(s).
4. Keep copies of your submitted documents for your records as proof of submission.
5. Please, do not enclose any payments with your forms. The Financial Management Division of your CUPA will bill you.
6. It is recommended that forms be sent via "Certified Mail" to ensure delivery by "Return Receipt."
7. Submit all completed forms to:

Los Angeles County Fire Department
Health Hazardous Materials Division
5825 Rickenbacker Road
Commerce, CA 90040
Attn: Data Operations Unit

8. If you have any questions or need assistance, contact your City or County CUPA or PA during office hours.
9. Be advised that failure to submit required forms may result in fines, penalties and/or other administrative fees.

WHAT DO I REPORT?

Enclosed is the **CUPAs of Los Angeles County Unified Program (UP) Form** for hazardous materials programs. This form includes instructions and requirements described in the California Health and Safety Code, Uniform Fire Code, and State regulations. Your business is required to complete and submit the **Business Activities Page** and a **Business Owner/Operator Identification Page**. In addition, your business is required to complete and submit reporting forms for any of the following programs that apply to your facility:

Hazardous Materials Disclosure

Any business, which handles the minimum amount of 55 gallons or 500 pounds of a hazardous material or 200 cubic feet of a compressed gas, at any one time during the reporting year, is considered a handler of hazardous materials. A Hazardous material handling business is required to submit **Chemical Description** page(s), Section I of the **Consolidated Contingency Plan**, and a **Site Map(s)** to the CUPA.

(Note: Under local ordinances, some agencies have hazardous materials reporting thresholds lower than State reporting thresholds. Contact your local CUPA or PA for additional information.)

California Accidental Release Prevention Program (Cal ARP)

Any business, which handles Regulated Substances (including Federally listed Extremely Hazardous Substances and State listed Acutely Hazardous Materials), is required to submit a **Regulated Substance Registration** to the CUPA. The list of Regulated Substances is included in this form packet.

Underground Storage Tank (UST) Program

Any business, which has underground storage tanks to store hazardous materials, including gasoline, is required to complete and submit a **UST Facility** page and **UST Tank** page for each tank to the CUPA. New USTs must complete and submit a **UST Installation - Certificate of Compliance** page. Also, businesses must complete and submit Section II of the **Consolidated Contingency Plan** and a **plot plan (with location of UST system(s))** to the CUPA.

Aboveground Petroleum Storage Tanks (APST)

Any business, which stores petroleum oil in aboveground storage tanks with a total capacity for the facility greater than 1320 gallons, is required to complete a **Spill Prevention Countermeasure Control (SPCC) Plan** and to include the following information in the business plan: (1) facility name, address, and owner or operator; (2) total storage capacity, and (3) the location, size, age, and contents of each storage tank that exceeds 10,000 gallons of petroleum oil.

Hazardous Waste Generator

Any business, which generates any quantity of a hazardous waste, is a hazardous waste generator. Hazardous wastes are any chemical wastes which are toxic, corrosive, reactive, or ignitable, as defined in State law, including waste oil, waste coolant, waste parts cleaner, waste photo developer, waste printing inks, waste dry cleaning solvent, waste paint and spray booth filters. Generators are required to submit a **Waste Generator** Form to the CUPA.

Hazardous waste generating businesses, which conduct onsite hazardous waste treatments authorized under Permit-By-Rule (PBR), Conditional Authorization (CA) and Conditional Exemption (CE) tiers, are required to complete and submit **Onsite Hazardous Waste Treatment Notification - Facility, Onsite Hazardous Waste Treatment Notification - Unit, Certificate of Financial Assurance** pages, and other attachments to the CUPA.

Businesses, which claim a recycling exclusion or exemption (per Health and Safety Code Section 25143.2) for a material or process from the hazardous waste generator or tiered permitting programs, must complete and submit the **Recyclable Materials Biennial Report** to the CUPA.

Hazardous waste generators, which collect non-RCRA hazardous waste or conduct hazardous waste activities exempt from RCRA at remote sites, and subsequently transport the hazardous waste to consolidation sites operated by the generator, must complete and submit a **Remote Waste Consolidation Site Annual Report** page to the CUPA.

Businesses closing Hazardous Waste tanks must complete and submit a **Hazardous Waste Tank Closure Certification** page to the CUPA.

BASIC INSTRUCTIONS

Your business is required to complete and submit to your local CUPA only the forms which are applicable to your facility's activities. First, complete the Business Activities Page to determine which forms that you are required to complete and submit to the CUPA. If you answer yes to any question on the Business Activities Page, complete the Business Owner/Operator Identification Page and all applicable program forms.

Important! We have provided instructions with each form in this package. Please, do not hesitate to contact your CUPA or PA if you have questions about the forms and program reporting requirements. It is only necessary to send the CUPA one copy of this form package. Forms for programs under a Participating Agency jurisdiction, such as the UST program or Hazardous Waste Generator program, will be forwarded by the CUPA to the PA.

FORM ORGANIZATION

The Unified Program Form (UP FORM) is organized as follows:

I. FACILITY INFORMATION SECTION

- a. Business Activities Page
- b. Business Owner/Operator Identification Page
- c. Consolidated Contingency Plan

II. HAZARDOUS MATERIALS

- a. Hazardous Materials Inventory- Chemical Description
- b. Cal ARP- Regulated Substance Registration

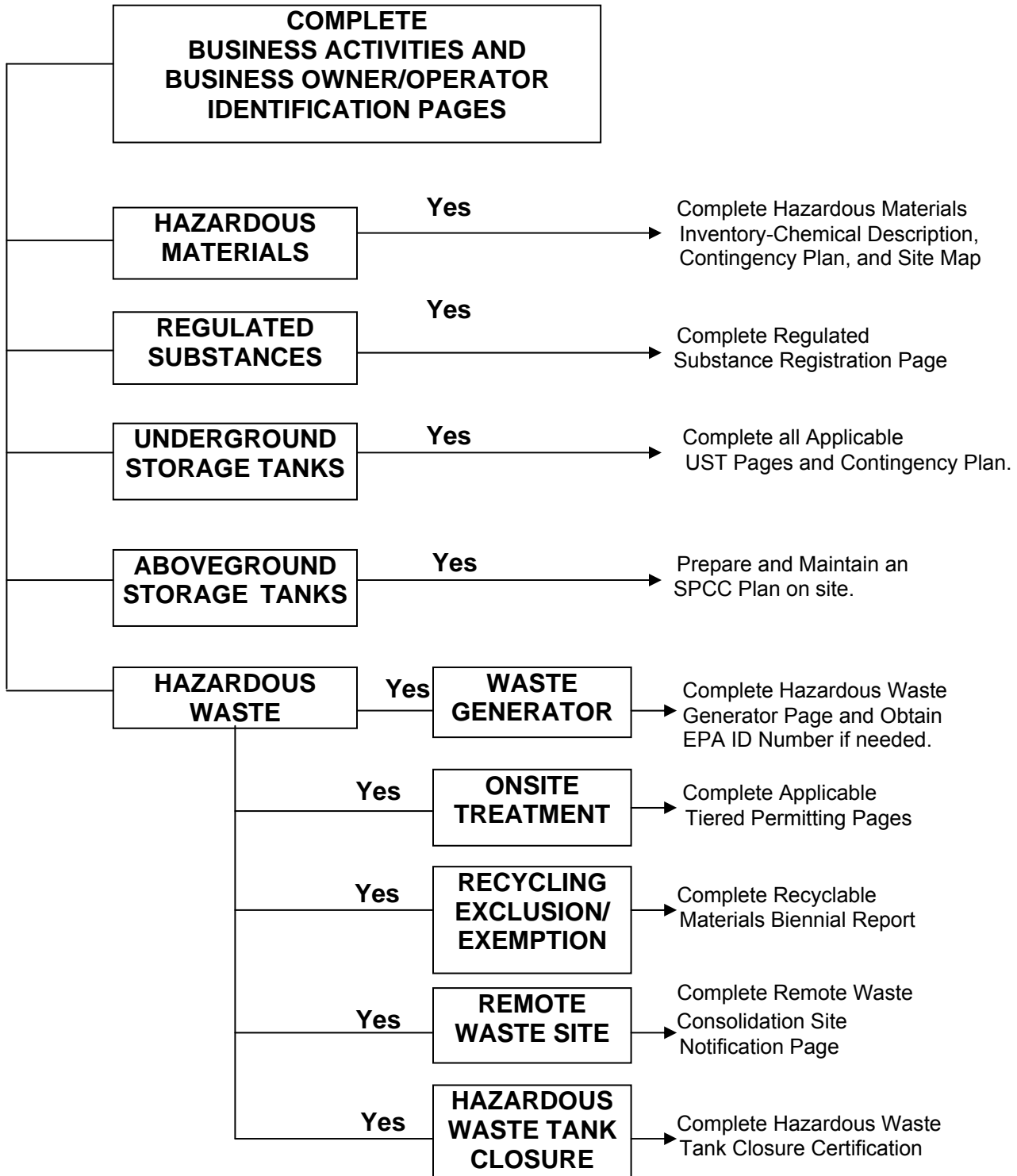
III. UNDERGROUND STORAGE TANKS (UST)

- a. UST Facility
- b. UST Tank
- c. UST Installation- Certificate of Compliance

IV. HAZARDOUS WASTE

- a. Recyclable Materials Report
- b. Onsite Hazardous Waste Treatment Notification- Facility
- c. Onsite Hazardous Waste Treatment Notification- Unit
 - (1) CESQT - Waste and Treatment Process Combination
 - (2) CESW - Waste and Treatment Process Combination
 - (3) CEL - Waste and Treatment Process Combination
 - (4) CA - Waste and Treatment Process Combination
 - (5) PBR - Waste and Treatment Process Combination
- d. Certification of Financial Assurance
- e. Remote Waste Consolidation Site Annual Notification
- f. Hazardous Waste Tank Closure Certification
- g. Hazardous Waste Generator Form

UNIFIED PROGRAM FORM FLOW CHART



I. FACILITY INFORMATION SECTION

To be completed by all businesses, regardless of program type.

Be advised that appropriate signatures must be provided on forms.

This section includes:

- o BUSINESS ACTIVITIES PAGE

Please complete this form first. This will help you to determine which other forms you are required to complete.

- o BUSINESS OWNER/OPERATOR IDENTIFICATION PAGE

All sections must be completed, including primary and secondary emergency contacts.

- o CONSOLIDATED CONTINGENCY PLAN

All regulated businesses must complete the Cover Page, Section I (Business Plan and Contingency Plan), and a Site Map.

Facilities with Underground Storage Tanks must also complete Section II (UST Emergency Response and Monitoring Plan).

INSTRUCTIONS FOR THE UNIFIED PROGRAM (UP) FORM Business Activities

Please submit the Business Activities page, the Business Owner/Operator Identification page (Form 2730), and Hazardous Materials Inventory - Chemical Description pages (Form 2731) for all submissions. Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER Leave this blank. This number is assigned by the Certified Unified Program Agency (CUPA) and identifies your facility.
2. EPA ID NUMBER If you generate, recycle, or treat hazardous waste, enter your facility's 12-character U.S. Environmental Protection Agency (U.S. EPA) or California Identification number. For facilities in California, the number usually starts with the letters "CA". If you need a CA EPA number, complete and submit DTSC Form 1358 located at http://www.dtsc.ca.gov/IDManifest/ID_Numbers.cfm to the Department of Toxic Substances Control (DTSC), or if you need a federal EPA number, call (415) 495-8895 <http://www.epa.gov/region09/waste/epanums.html#rcranum>
3. BUSINESS NAME Enter the full legal name of the business. This is the same as the terms "Facility Name" or "DBA - Doing Business As".
- 3a. BUSINESS SITE ADDRESS- Enter the street address where the facility is located. No post office box numbers are allowed. This information must provide a means to geographically locate the facility.
4. HAZARDOUS MATERIALS ONSITE Check the box to indicate whether you have hazardous materials onsite. You have a hazardous material if:
 - It is handled in quantities equal to or greater than 500 pounds, 55 gallons, or 200 cubic feet of gas (calculated at standard temperature and pressure),
 - It is handled in quantities equal to or greater than the applicable federal threshold planning quantity for an extremely hazardous substance listed in 40 CFR Part 355, Appendix A,
 - Radioactive materials are handled in quantities for which an emergency plan is required to be adopted pursuant to Part 30, Part 40, or Part 70 of Chapter 10 of 10 CFR, or pursuant to any regulations adopted by the state in accordance with these regulations.

If you have hazardous materials onsite, then you must complete the Business Owner/Operator Identification page (OES Form 2730) and the Hazardous Materials Inventory - Chemical Description page (OES Form 2731), as well as an Emergency Response Plan (i.e. Consolidated Contingency Plan) and Training Plan. Do not answer "YES" to this question if you exceed only a local threshold, but do not exceed the state threshold.

5. OWN OR OPERATE UNDERGROUND STORAGE TANK (UST) Check the appropriate box to indicate whether you own or operate USTs containing hazardous substances as defined in Health and Safety Code (HSC) §25316. If "YES", then you must complete one UST Facility page and UST Tank pages for each tank. **You must also submit a plot plan and a monitoring program plan.**
6. UPGRADE/INSTALL UST Check the appropriate box to indicate whether you intend to install or upgrade USTs containing hazardous substances as defined in HSC §25316. If "YES", then you must complete the UST Installation - Certificate of Compliance page in addition to UST Facility and Tank pages, plot plan and monitoring program plan.
7. UST CLOSURE Check the appropriate box if you are closing a UST and complete the closure portion of the UST Tank pages for each tank.
8. OWN OR OPERATE ABOVEGROUND PETROLEUM STORAGE TANK (APST) To calculate the storage capacity of petroleum oil, add the volume capacities of all containers and tanks that store 55 gallons or more of petroleum oil in your calculation. Do not include underground storage tanks. In the H&SC, Section 25270.2 (g) defines petroleum oil and Section 25270.2 (a)(4) lists the types of petroleum oil that are exempt. Until the CUPA provides a tank facility statement, document your consolidated contingency plan with the following tank information: (1) facility name, address, and owner or operator; (2) total storage capacity, and (3) the location, size, age, and contents of each storage tank that exceeds 10,000 gallons of petroleum oil. If you have 1,320 gallons or more of petroleum oil, prepare a spill prevention control and countermeasure plan.
9. HAZARDOUS WASTE GENERATOR Check the appropriate box to indicate whether your facility generates hazardous waste. A generator is the person or business whose acts or processes produce a hazardous waste or who causes a hazardous substance or waste to become subject to State hazardous waste law. If your facility generates hazardous waste, you must obtain and use an EPA Identification number (ID) in order to properly transport and dispose of it. Report your EPA ID number in #2. Hazardous waste means a waste that meets any of the criteria for the identification of a hazardous waste adopted by DTSC pursuant to HSC §25141. "Hazardous waste" includes, but is not limited to, federally regulated hazardous waste. Federal hazardous waste law is known as the Resource Conservation and Recovery Act (RCRA). Unless explicitly stated otherwise, "hazardous waste" also includes extremely hazardous waste and acutely hazardous waste.
10. RECYCLE Check the appropriate box to indicate whether your facility recycles more than 100 kilograms per month of recyclable material under a claim that the material is excluded or exempt per HSC §25143.2. Check "YES" and complete the Recyclable Materials Report pages, if you either recycled onsite or recycled excluded recyclable materials which were generated offsite. Check "NO" if you only send recyclable materials to an offsite recycler; you do not need to report.
11. ONSITE HAZARDOUS WASTE TREATMENT Check the appropriate box to indicate whether your facility treats hazardous waste onsite. "Treatment" means any method, technique, or process which is designed to change the physical, chemical, or biological character or composition of any hazardous waste or any material contained therein, or removes or reduces its harmful properties or characteristics for any purpose. "Treatment" does not include the removal of residues from manufacturing process equipment for the purposes of cleaning that equipment. Amendments (effective 1/1/99) add exemptions from the definition of "treatment" for certain processes under specific, limited conditions. Refer to HSC §25123.5 (b) for these specific exemptions. Treatment of certain laboratory hazardous wastes do not require authorization. Refer to HSC §25200.3.1 for specific information. Please contact your CUPA to determine if any exemptions apply to your facility. If your facility treats hazardous waste onsite, complete the Onsite Hazardous Waste Treatment Notification - Facility page and one set of Onsite Hazardous Waste Treatment Notification - Unit pages for each unit.
12. FINANCIAL ASSURANCE Check the appropriate box to indicate whether your facility is subject to financial assurance requirements for closure of an onsite treatment unit. Unless they are exempt, Permit by Rule (PBR) and Conditionally Authorized (CA) operations are required to provide financial assurance for closure costs (per 22 CCR §67450.13 (b) and HSC §25245.4). If your facility is subject to financial assurance requirements or claiming an exemption, then complete the Certification of Financial Assurance page.
13. REMOTE WASTE CONSOLIDATION SITE Check the appropriate box to indicate whether your facility consolidates hazardous waste generated at a remote site. Answer "YES" if you are a hazardous waste generator that collects hazardous waste at remote sites and transports the hazardous waste to a consolidation site you also operate. You must be eligible pursuant to the conditions in HSC §25110.10. If your facility consolidates hazardous waste generated at a remote site, then complete the Remote Waste Consolidation Site Annual Notification page.
14. HAZARDOUS WASTE TANK CLOSURE Check the appropriate box to indicate whether the tank being closed would be classified as hazardous waste after its contents are removed. Classification could be based on your knowledge of the tank and its contents, the mixture rule, testing of the tank, the listed wastes in 40 CFR 261.31 or 40 CFR 261.32, or inability to remove hazardous materials stored in the tank. If the closed tank would be classified as hazardous waste, then complete the Hazardous Waste Tank Closure Certification page.
- 14a. RCRA LQG- Check the appropriate box to indicate whether your facility is a Large Quantity Generator. If YES, you must obtain a US EPA ID Number.
- 14b. HOUSEHOLD HAZARDOUS WASTE COLLECTION- Check the appropriate box to indicate whether your facility is a HHW Collection Site.
15. LOCAL REQUIREMENTS- Some CUPAs or AAs may require additional information. Check with your CUPA before submitting the UPCF.
- 15a. LOCAL REQUIRED INFORMATION: REGULATED SUBSTANCES (RS) Check the box to indicate whether Regulated Substances (RS) are stored onsite. An RS is any substance, listed in CCR, Title 19, Section 2770.5. See attached Regulated Substance list. If you handle an RS at greater than the threshold planning quantities then complete the Regulated Substance Registration in addition to forms required under item number 4.
- 15b. LOCAL HAZARDOUS MATERIALS THRESHOLD Check the appropriate box to indicate if you are subject to reporting hazardous materials at a level established by your local CUPA or PA. Check with your local CUPA or PA for details.

UNIFIED PROGRAM (UP) FORM BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID #	1	EPA ID # (Hazardous Waste Only)	2
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)			3
BUSINESS SITE ADDRESS			3a

II. ACTIVITIES DECLARATION

**NOTE: If you check YES to any part of this list,
please submit the Business Owner/Operator Identification page.**

Does your facility...	If Yes, please complete these pages of the UP FORM....
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<p>A. HAZARDOUS MATERIALS</p> <p>Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 4	<p>HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION CONSOLIDATED CONTINGENCY PLAN (Section I and Site Map(s)) TRAINING PLAN</p>
<p>B. UNDERGROUND STORAGE TANKS (USTs)</p> <p>1. Own or operate underground storage tanks?</p> <p>2. Intend to upgrade existing or install new USTs?</p> <p>3. Need to report closing a UST?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 5 <input type="checkbox"/> YES <input type="checkbox"/> NO 6 <input type="checkbox"/> YES <input type="checkbox"/> NO 7	<p>UST FACILITY UST TANK (one page per tank)</p> <p>UST FACILITY UST TANK (one per tank) UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) UST TANK (closure portion –one page per tank)</p>
<p>C. ABOVE GROUND PETROLEUM STORAGE TANKS (APSTs)</p> <p>Petroleum oil is stored in any container or tank that has a storage capacity of 55 gallons or more. The aggregate capacity of petroleum oil in all tanks and containers is greater than 1,320 gallons.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 8	<p>CONSOLIDATED CONTINGENCY PLAN (Section I and Site Map(s))</p>
<p>D. HAZARDOUS WASTE</p> <p>1. Generate hazardous waste?</p> <p>2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?</p> <p>3. Treat hazardous waste on site?</p> <p>4. Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?</p> <p>5. Consolidate hazardous waste generated at a remote site?</p> <p>6. Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?</p> <p>7. Generate in any single calendar month 1,000 kilograms (kg) (2,000 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.</p> <p>8. Household Hazardous Waste (HHW) Collection site</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 9 <input type="checkbox"/> YES <input type="checkbox"/> NO 10 <input type="checkbox"/> YES <input type="checkbox"/> NO 11 <input type="checkbox"/> YES <input type="checkbox"/> NO 12 <input type="checkbox"/> YES <input type="checkbox"/> NO 13 <input type="checkbox"/> YES <input type="checkbox"/> NO 14 <input type="checkbox"/> YES <input type="checkbox"/> NO 14a <input type="checkbox"/> YES <input type="checkbox"/> NO 14b	<p>EPA ID NUMBER – provide at the top of this page. As a generator, answer YES to Item E2b and complete Waste Generator Form.</p> <p>RECYCLABLE MATERIALS REPORT ONSITE HAZARDOUS WASTE TREATMENT – FACILITY ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit) CERTIFICATION OF FINANCIAL ASSURANCE REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION HAZARDOUS WASTE TANK CLOSURE CERTIFICATION</p> <p>Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B) and satisfy requirements for RCRA Large Quantity Generator.</p> <p>See CUPA for required forms.</p>

E. LOCAL REQUIREMENTS	15
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<p>1. REGULATED SUBSTANCES</p> <p>Have Regulated Substances (RS) including Extremely Hazardous Substances (EHS) stored on site at greater than the threshold planning quantities established by the California Accidental Release Program (Cal ARP) ?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 15a	<p>In addition to Hazardous Materials requirements, complete: Regulated Substance Registration Risk Management Plan (when required)</p>
<p>2. Have hazardous materials on site at or above threshold amount established by CUPA or PA local ordinance?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO 15b	<p>Consult local CUPA or PA for added reporting requirements</p>

Business Owner/Operator Identification (LACoCUPA Form 2730)

Please submit the Business Activities page, the Business Owner/Operator Identification page (Form 2730), and Hazardous Materials - Chemical Description pages (Form 2731) for all hazardous materials inventory submissions. For the inventory to be considered complete, this page must be signed by the appropriate individual. Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME Enter the full legal name of the business.
100. BEGINNING DATE Enter the beginning year and date of the report. (YYYY/MM/DD, ex. 1999/07/01)
101. ENDING DATE Enter the ending year and date of the report. (YYYY/MM/DD, ex. 2000/06/30)
102. BUSINESS PHONE Enter the phone number, area code first, and any extension.
103. BUSINESS SITE ADDRESS Enter the street address where the facility is located. No post office box numbers are allowed.
104. CITY Enter the city or unincorporated area in which the business site is located.
105. ZIP CODE - Enter the zip code of the business site. The extra 4 digits in the zip code may also be added.
106. DUN & BRADSTREET Enter the Dun and Bradstreet number for the facility. The Dun & Bradstreet number may be obtained by calling (610) 882-7748 or by visiting Dun and Bradstreet on the internet at www.dnb.com.
107. SIC CODE Enter the primary Standard Industrial Classification Code number for primary business activity. Report only the first four digits.
108. COUNTY Enter the county in which the business site is located.
109. BUSINESS OPERATOR NAME Enter the name of the business operator.
110. BUSINESS OPERATOR PHONE Enter business operator's phone number including any extension, if different from the business phone.
111. OWNER NAME Enter name of the business owner, if different from the business operator.
112. OWNER PHONE Enter the business owner's phone number if different from the business phone, area code first, and any extension.
113. OWNER MAILING ADDRESS Enter the owner's mailing address if different from the business site address.
114. OWNER CITY Enter the name of the city for the owner's mailing address.
115. OWNER STATE Enter the 2 character state abbreviation for the owner's mailing address.
116. OWNER ZIP CODE Enter the zip code for the owner's address. The extra 4 digits in the zip code may also be added.
117. ENVIRONMENTAL CONTACT NAME Enter the name of the person, if different from the Business Owner or Operator, who receives all environmental correspondence and will respond to enforcement activity.
118. CONTACT PHONE Enter the phone number at which the environmental contact can be contacted including any extension.
119. CONTACT MAILING ADDRESS Enter the mailing address where all environmental contact correspondence should be sent.
120. CITY Enter the name of the city for the environmental contact's mailing address.
121. STATE Enter the 2 character state abbreviation for the environmental contact's mailing address.
122. ZIP CODE Enter the zip code for the environmental contact's mailing address. The extra 4 digits in the zip code may also be added.
123. PRIMARY EMERGENCY CONTACT NAME Enter the name of a representative that can be contacted in case of an emergency involving hazardous materials at the business site. The contact shall have FULL facility access, site familiarity, and authority to make decisions for the business regarding incident mitigation.
124. TITLE Enter the title of the primary emergency contact.
125. BUSINESS PHONE Enter the business number for the primary emergency contact, area code first, and any extensions.
126. 24-HOUR PHONE Enter a 24-hour phone number for the primary emergency contact. The 24-hour phone number must be one answered 24 hours a day. If it is not the contact's home phone number, then the service answering the phone must be able to immediately contact the individual stated above.
127. PAGER NUMBER Enter the pager number for the primary emergency contact, if available.
128. SECONDARY EMERGENCY CONTACT NAME Enter the name of a secondary representative that can be contacted in the event that the primary emergency contact is not available. The contact shall have FULL facility access, site familiarity, and authority to make decisions for the business regarding incident mitigation.
129. TITLE Enter the title of the secondary emergency contact.
130. BUSINESS PHONE Enter the business telephone number for the secondary emergency contact, area code first, and any extension.
131. 24-HOUR PHONE Enter a 24-hour phone number for the secondary emergency contact. The 24 hour phone number must be one which is answered 24 hours a day. If it is not the contact's home phone number, then the service answering the phone must be able to immediately contact the individual stated above.
132. PAGER NUMBER Enter the pager number for the secondary emergency contact, if available.
- 133a. UNINCORPORATED AREA Check "Yes" if your facility is located in an unincorporated area of the County (ex. East LA, Marina Del Rey etc.).
- 133b. E-MAIL ADDRESS Enter the e-mail address of the corresponding primary or secondary emergency contact if an e-mail address exists.
- 133c. LOCALLY COLLECTED INFORMATION Enter your business's tax identification number or social security number. The TIN number may be obtained from the Internal Revenue Service (IRS). Also, include the business owner's/president's name, position in the business, date of birth and driver's license number with the State issued in abbreviation.
- 133d. Number of Employees for facility: For Retail and service type businesses; the number of employees is determined by the actual number of employees directly related to the hazardous waste generating activity (s). For manufacturing type businesses; the total number of employees in the business shall be used for determining the hazardous waste licensing fee.
- 133e. Businesses will be identified by the following twelve codes: 01)-Corporation, 02)-Individual Owner, 03)-Partnership, 04)-Local Government Agency, 05)-County Government Agency, 06)-State Government Agency, 07)-Federal Government Agency, 08)-LA County Fire Department Facilities, 09)-Unknown Classification (Other), 10)-City Fire Facilities, 11)-LA County Sheriff Facilities, 12)-Other Police Facilities.
- 133f. MAILING/BILLING ADDRESS Enter the address that all correspondence and bills should be sent.
- 133g. MAILING/BILLING CITY Enter the city for the mailing/billing address.
- 133h. MAILING/BILLING STATE Enter the 2 character state abbreviation for the mailing/billing address.
- 133i. MAILING/BILLING ZIP CODE Enter the zip code for the mailing/billing address. The extra 4 digits in the zip code may also be added.
134. DATE Enter the date that the document was signed. (YYYYMMDD, ex. 1999/07/01)
135. NAME OF DOCUMENT PREPARER Enter the full name of the person who prepared the inventory submittal information.
136. NAME OF SIGNER Enter the full printed name of the person signing the page.
SIGNATURE OF OWNER/ OPERATOR OR DESIGNATED REPRESENTATIVE The Business Owner/Operator, or officially designated representative of the Owner/Operator, shall sign in the space provided. This signature certifies the signer is familiar with the information submitted, and based on the signer's inquiry of those individuals responsible for obtaining the information, it is the signer's belief that the information is true, accurate and complete.
137. TITLE OF SIGNER Enter the title of the person signing the page.

UNIFIED PROGRAM (UP) FORM
BUSINESS OWNER/OPERATOR IDENTIFICATION (LACoCUPA Form 2730)

NEW BUSINESS OUT OF BUSINESS REVISE/UPDATE (EFFECTIVE: / /) PAGE OF

I. IDENTIFICATION

FACILITY ID#		1	BEGINNING DATE	100	ENDING DATE	101	
BUSINESS NAME (Same as FACILITY NAME or DBA - Doing Business As)			3	BUSINESS PHONE			102
BUSINESS SITE ADDRESS							103
CITY	104	C	ZIP CODE				105
DUN & BRADSTREET				106	SIC CODE (4 digit #)		107
COUNTY	LOS ANGELES			108	UNINCORPORATED <input type="checkbox"/> Yes <input type="checkbox"/> No		133a.
BUSINESS OPERATOR NAME			109	BUSINESS OPERATOR PHONE			110

II. BUSINESS OWNER

OWNER NAME	111	OWNER PHONE	112		
OWNER MAILING ADDRESS				113	
CITY	114	STATE	115	ZIP CODE	116

III. ENVIRONMENTAL CONTACT

CONTACT NAME	117	CONTACT PHONE	118		
CONTACT MAILING ADDRESS				119	
CITY	120	STATE	121	ZIP CODE	122

IV. EMERGENCY CONTACTS

PRIMARY		SECONDARY	
NAME	123	NAME	128
TITLE	124	TITLE	129
BUSINESS PHONE	125	BUSINESS PHONE	130
24-HOUR PHONE	126	24-HOUR PHONE	131
PAGER #	127	PAGER #	132
E-MAIL ADDRESS (if any)	133b	E-MAIL ADDRESS (if any)	133b

V. ADDITIONAL LOCALLY COLLECTED INFORMATION

FEDERAL TAX IDENTIFICATION NUMBER	133c	NO. OF EMPLOYEES	133d
NAME, POSITION, AND DATE OF BIRTH		BUSINESS CODE	133e
DRIVER'S LICENSE NUMBER AND STATE			

MAILING/ BILLING INFORMATION

ADDRESS	133f	CITY	133g	STATE	133h	ZIP CODE	133i
---------	------	------	------	-------	------	----------	------

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE	134	NAME OF DOCUMENT PREPARER	135
NAME OF SIGNER (print)	136	TITLE OF SIGNER	137	

OFFICIAL USE ONLY	UP Form	HW	HM	ARP	APST	UST	TP	CUPA	PA
INSPECTOR	DISTRICT	DATE OF INSP.	DIVISION	BATTALION	STATION				

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**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

COVER PAGE

FACILITY IDENTIFICATION			
BUSINESS NAME		3	FACILITY ID # 1
SITE ADDRESS	103	CITY	104 ZIP CODE 105

The Consolidated Contingency Plan provides businesses a format to comply with the emergency planning requirements of the following three written hazardous materials emergency response plans required in California:

- ⊖ Hazardous Materials Business Plan (HSC Chapter 6.95 Section 25504 (b) and 19 CCR Sections 2729-2732),
- ⊖ Hazardous Waste Generator Contingency Plan (22 CCR Section 66264.52), and,
- ⊖ Underground Storage Tank Emergency Response Plan and Monitoring Program (23 CCR Sections 2632 and 2641).

This format is designed to reduce duplication in the preparation and use of emergency response plans at the same facility, and to improve the coordination between facility response personnel and local, state and federal emergency responders during an emergency. Use the chart below to determine which sections of the Consolidated Contingency Plan need to be completed for your facility. If you are unsure as to which programs your facility is subject to, refer to the Business Activities Page.

PROGRAMS	SECTION(S) TO BE COMPLETED
Hazardous Materials Business Plan (HMBP)	Cover Page, Section I, and Site Map(s)
Hazardous Waste Generator (HWG)	Cover Page, Section I, and Site Map(s)
Underground Storage Tank (UST)	Cover Page, Sections I and II, and Site Map(s)
HMBP, HWG, UST	Cover Page, Sections I and II, and Site Map(s)

A copy of the plan shall be submitted to your local CUPA and at least one copy of the plan shall be maintained at the facility for use in the event of an emergency and for inspection by the local agency. Describe below where a copy of your Contingency Plan, including the hazardous material inventories and Site Map(s), is located at your business:

--

PLAN CERTIFICATION	
<i>I certify under penalty of law that I have personally examined and I am familiar with the information provided by this plan and to the best of my knowledge the information is accurate, complete, and true.</i>	
Printed Name of Owner/ Operator	Title of Owner/Operator
Signature of Owner/ Operator	Date

We appreciate the effort of local businesses in completing these plans and will assist in every possible way. If you have any questions, please contact your local CUPA or PA.

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**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

ADVISORY

The site-specific Contingency Plan is the facility's plan for dealing with emergencies and shall be implemented immediately whenever there is a fire, explosion, or release of hazardous materials that could threaten human health and/or the environment. The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

- ⊖ the plan fails in an emergency,
- ⊖ the facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency,
- ⊖ the list of emergency coordinators changes, or
- ⊖ the list of emergency equipment changes.

Submit a copy of any updates or changes to your local CUPA or PA.

UST owners/operators must notify the local UPA within 30 days for any changes to the monitoring procedures listed in the UST Emergency Response and Monitoring Plan as found Section II of the Consolidated Contingency Plan.

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

I. FACILITY IDENTIFICATION			
BUSINESS NAME		3	FACILITY ID # 1
SITE ADDRESS		103	CITY
		104	ZIP CODE 105
II. EMERGENCY CONTACTS			
PRIMARY		SECONDARY	
NAME	123	NAME	128
TITLE	124	TITLE	129
BUSINESS PHONE	125	BUSINESS PHONE	130
24-HOUR PHONE	126	24-HOUR PHONE	131
PAGER #	127	PAGER #	132
III. EMERGENCY RESPONSE PLANS AND PROCEDURES			
A. Notifications			
Your business is required by State Law to provide an immediate verbal report of any release or threatened release of a hazardous material to local fire emergency response personnel, this Unified Program Agency (CUPA or PA), and the California Emergency Management Agency (Cal-EMA). If you have a release or threatened release of hazardous materials, immediately call:			
FIRE/PARAMEDICS/POLICE/SHERIFF PHONE: 911			
AFTER the local emergency response personnel are notified, you shall then notify this Unified Program Agency and Cal-EMA.			
Local Unified Program Agency:	(323) 890-4317		
Cal-EMA:	(800) 852-7550		
National Response Center:	(800) 424-8802		
Information to be provided during Notification:			
⊗	Your Name and the Telephone Number from where you are calling.		
⊗	Exact address of the release or threatened release.		
⊗	Date, time, cause, and type of incident (e.g. fire, air release, spill etc.)		
⊗	Material and quantity of the release, to the extent known.		
⊗	Current condition of the facility.		
⊗	Extent of injuries, if any.		
⊗	Possible hazards to public health and/ or the environment outside of the facility.		
B. Emergency Medical Facility			
List the local emergency medical facility that will be used by your business in the event of an accident or injury caused by a release or threatened release of hazardous material			
HOSPITAL/CLINIC:		PHONE NO:	
		- -	
ADDRESS:			
CITY:		ZIP CODE:	

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**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

C. Private Emergency Response	
DOES YOUR BUSINESS HAVE A PRIVATE ON-SITE EMERGENCY RESPONSE TEAM? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide an attachment that describes what policies and procedures your business will follow to notify your on-site emergency response team in the event of a release or threatened release of hazardous materials.	
CLEANUP/DISPOSAL CONTRACTOR	
List the contractor that will provide cleanup services in the event of a release.	
NAME OF CONTRACTOR:	PHONE NO: - -
ADDRESS:	
CITY:	ZIP CODE:
D. Arrangements With Emergency Responders	
If you have made special (i.e. contractual) arrangements with any police department, fire department, hospital, contractor, or State or local emergency response team to coordinate emergency services, describe those arrangements on the lines below:	
E. Evacuation Plan	
1. The following alarm signal(s) will be used to begin evacuation of the facility (<i>check all which apply</i>):	
<input type="checkbox"/> Verbal <input type="checkbox"/> Telephone (<i>including cellular</i>) <input type="checkbox"/> Alarm System <input type="checkbox"/> Public Address System <input type="checkbox"/> Intercom <input type="checkbox"/> Pagers <input type="checkbox"/> Portable Radio <input type="checkbox"/> Other (<i>specify</i>):	
2. <input type="checkbox"/> Evacuation map is prominently displayed throughout the facility.	
3. <input type="checkbox"/> Individual(s) responsible for coordinating evacuation including spreading the alarm and confirming the business has been evacuated:	
F. Earthquake Vulnerability	
Identify areas of the facility where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion.	
<input type="checkbox"/> Hazardous Waste/ Hazardous Materials Storage Areas <input type="checkbox"/> Bench/ Lab	<input type="checkbox"/> Production Floor <input type="checkbox"/> Waste Treatment <input type="checkbox"/> Other:
Identify mechanical systems where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion.	
<input type="checkbox"/> Utilities <input type="checkbox"/> Racks <input type="checkbox"/> Process Piping	<input type="checkbox"/> Sprinkler Systems <input type="checkbox"/> Pressure Vessels <input type="checkbox"/> Shutoff Valves <input type="checkbox"/> Cabinets <input type="checkbox"/> Gas Cylinders <input type="checkbox"/> Other:
<input type="checkbox"/> Shelves <input type="checkbox"/> Tanks	

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

G.	Emergency Procedures
Briefly describe your business standard operating procedures in the event of a release or threatened release of hazardous materials:	
1.	PREVENTION (prevent the hazard) - Describe the kinds of hazards associated with the hazardous materials present at your facility. What actions would your business take to prevent these hazards from occurring? You may include a discussion of safety and storage procedures.
2.	MITIGATION (reduce the hazard) - Describe what is done to lessen the harm or the damage to person(s), property, or the environment, and prevent what has occurred from getting worse or spreading. What is your immediate response to a leak, spill, fire, explosion, or airborne release at your business?
3.	ABATEMENT (remove the hazard) - Describe what you would do to stop and remove the hazard. How do you handle the complete process of stopping a release, cleaning up, and disposing of released materials at your facility?

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

IV. Emergency Equipment

22 CCR, Section 66265.52(e) [as referenced by Section 66262.34(a)(3)] requires that emergency equipment at the facility be listed. Completion of the following Emergency Equipment Inventory Table meets this requirement.

EMERGENCY EQUIPMENT INVENTORY TABLE

1. Equipment Category	2. Equipment Type	3. Location *	4. Description**
Personal Protective, Equipment, Safety Equipment, and First Aid Equipment	<input type="checkbox"/> Cartridge Respirators		
	<input type="checkbox"/> Chemical Monitoring Equipment (<i>describe</i>)		
	<input type="checkbox"/> Chemical Protective Aprons/Coats		
	<input type="checkbox"/> Chemical Protective Boots		
	<input type="checkbox"/> Chemical Protective Gloves		
	<input type="checkbox"/> Chemical Protective Suits (<i>describe</i>)		
	<input type="checkbox"/> Face Shields		
	<input type="checkbox"/> First Aid Kits/Stations (<i>describe</i>)		
	<input type="checkbox"/> Hard Hats		
	<input type="checkbox"/> Plumbed Eye Wash Stations		
	<input type="checkbox"/> Portable Eye Wash Kits (<i>i.e. bottle type</i>)		
	<input type="checkbox"/> Respirator Cartridges (<i>describe</i>)		
	<input type="checkbox"/> Safety Glasses/Splash Goggles		
	<input type="checkbox"/> Safety Showers		
<input type="checkbox"/> Self-Contained Breathing Apparatuses (SCBA)			
<input type="checkbox"/> Other (<i>describe</i>)			
Fire Extinguishing Systems	<input type="checkbox"/> Automatic Fire Sptinkler Systems		
	<input type="checkbox"/> Fire Alarm Boxes/Stations		
	<input type="checkbox"/> Fire Extinguisher Systems (<i>describe</i>)		
	<input type="checkbox"/> Other (<i>describe</i>)		
Spill Control Equipment and Decontamination Equipment	<input type="checkbox"/> Absorbents (<i>describe</i>)		
	<input type="checkbox"/> Berms/Dikes (<i>describe</i>)		
	<input type="checkbox"/> Decontamination Equipment (<i>describe</i>)		
	<input type="checkbox"/> Emergency Tanks (<i>describe</i>)		
	<input type="checkbox"/> Exhaust Hoods		
	<input type="checkbox"/> Gas Cylinders Leak Repair Kits (<i>describe</i>)		
	<input type="checkbox"/> Neutralizers (<i>describe</i>)		
	<input type="checkbox"/> Overpack Drums		
	<input type="checkbox"/> Sumps (<i>describe</i>)		
<input type="checkbox"/> Other (<i>describe</i>)			
Communications and Alarm Systems	<input type="checkbox"/> Chemical Alarms (<i>describe</i>)		
	<input type="checkbox"/> Intercoms/ PA Systems		
	<input type="checkbox"/> Portable Radios		
	<input type="checkbox"/> Telephones		
	<input type="checkbox"/> Underground Tank Leak Detection Monitors		
<input type="checkbox"/> Other (<i>describe</i>)			
Additional Equipment (Use Additional Pages if Needed.)			

* Use the Location Codes (LC) from the Site Map(s) prepared for your Contingency Plan.

** Describe the equipment and its capabilities. If applicable, specify any testing/maintenance procedures/intervals. Attach additional pages, numbered appropriately, if needed.

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

V. EMPLOYEE TRAINING

All facilities which handle hazardous materials must have a written employee training plan. A blank plan has been provided below for you to complete and submit. The items listed below are required per Health and Safety Code Section 25504 (c) and Title 19 Section 2732.

Facility personnel are trained as follows:

- ⊗ Familiarity with all plans and procedures specified in the Contingency Plan.
- ⊗ Methods for Safe Handling of Hazardous Materials.
- ⊗ Safety procedures in the event of a release or threatened release of a hazardous material.
- ⊗ Use of Emergency Response equipment and supplies under the control of the business.
- ⊗ Procedures for Coordination with local Emergency Response Organizations.

Training shall be provided:

- ⊗ Initially for all new employees.
- ⊗ Annually, including refresher courses, for all employees.

Note: These training programs may take into consideration the position of each employee.

Additional training should include:

- ⊗ Internal alarm/notification procedures.
- ⊗ Evacuation/re-entry procedures and assembly point locations.
- ⊗ Material Safety Data Sheet (MSDS) training including specific hazard(s) of each chemical to which employees may be exposed, including routes of exposure (*i.e. inhalation, ingestion, absorption*).

VI. HAZARDOUS WASTE GENERATOR TRAINING

If your business is a hazardous waste generator, you are required to provide training in hazardous waste management for all workers who handle hazardous waste at your site (22 CCR §66265.16). You are also required to document training. The items below are required.

EMPLOYEE TRAINING	
⊗	Facility personnel will successfully complete training within six months after the date of their employment or assignment to a facility or to a new position at a facility.
⊗	Employees will not handle hazardous wastes without supervision until trained.
TRAINING DOCUMENTATION	
The owner or operator must maintain the following documents and records at the facility:	
⊗	Job title for each position at the facility that is related to hazardous waste management, and the names of the employee(s) filling the position(s).
⊗	Description for each position listed above (must include required skill, education, or other qualifications as well as duties of employees assigned to the position).
⊗	Description of <i>type</i> and <i>amount</i> of both introductory and continuing training given to each employee.
⊗	Records that document that the requirements for training or job experience have been met.
⊗	Current employees' training records (to be retained until closure of the facility).
⊗	Former employees' training records (to be retained at least three years after termination of employment).

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Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

SITE MAP

BUSINESS NAME			3
SITE ADDRESS	103	CITY	104
		ZIP CODE	105
DATE MAP DRAWN	MAP #	FACILITY ID #	1
- -			

	A	B	C	D	E	F	G	H	I	J	
1											For Site Map <ul style="list-style-type: none"> Scale of Map Loading Areas Parking Lots Internal Roads Storm and Sewer Drains Adjacent Property Use Locations and Names of Adjacent Streets and Alleys Access and Egress Points and Roads Primary and Alternate Evacuation Routes
2											
3											
4											
5											
6											For Sub-Site Map <ul style="list-style-type: none"> Scale of Map Location of Each Storage Area Location of Each Hazardous Material Handling Area Location of Emergency Response Equipment
7											
8											
9											
10											
11											Scale: 1" = _____ Ft.
12											

North

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II. HAZARDOUS MATERIALS SECTION

To be completed by all businesses that handle hazardous materials and/or regulated substances (including extremely hazardous substances)

Be advised that appropriate signatures must be provided on forms.

This section includes:

- **HAZARDOUS MATERIALS INVENTORY FORM - CHEMICAL DESCRIPTION**

One chemical per page. Make photocopies as necessary.

CAS Numbers must be provided for each chemical and hazardous component. To obtain the CAS#, refer to the chemical's MSDS (Materials Safety Data Sheet), or contact the chemical's manufacturer, or the Chemical Abstracts Service at (614) 447-3600.

Facilities reporting chemicals subject to EPCRA (Emergency Planning and Community Right-to-Know Act) reporting thresholds must sign each page for each EPCRA reported chemical. For more information on EPCRA, contact US EPA at (800) 424-9346, or visit US EPA's EPCRA website at: <http://www.epa.gov/lawsregs/laws/epcra.html>

- **REGULATED SUBSTANCE REGISTRATION FORM**

One chemical per page. Make photocopies as necessary.

- **REGULATED SUBSTANCE LIST**

Hazardous Materials Inventory – Chemical Description (LACoCUPA Form 2731)

Complete a separate Hazardous Materials Inventory - Chemical Description page for each hazardous material (hazardous substances and hazardous waste) handled at your facility in aggregate quantities equal to or greater than 500 pounds, 55 gallons, 200 cubic feet of gas (calculated at standard temperature and pressure), or the federal threshold planning quantity for Extremely Hazardous Substances, whichever is less. Also, complete a page for each radioactive material handled over quantities for which an emergency plan is required by 10 CFR Parts 30, 40, or 70. Completed inventories should reflect all reportable quantities of hazardous materials at your facility, reported **separately** for each building or outside adjacent area, with **separate** pages for unique occurrences of physical state, storage temperature and storage pressure. Please, number all pages of your submittal.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME Enter the full legal name of the business.
199. SUB LOCATION Enter the sub-location where applicable such as basement, emergency generator, chiller unit, pump room. If chemicals are stored in different suites within a building, the suite may also be entered in the sub location field.
200. ADD/DELETE/ REVISE Indicate if the material is being added to the inventory, deleted from the inventory, or if the information previously submitted is being revised. NOTE: You may choose to leave this blank if you resubmit your entire inventory annually.
201. CHEMICAL LOCATION Enter the building or outside/ adjacent area where the hazardous material is handled. A chemical that is stored at the same pressure and temperature, in multiple locations within a building, can be reported on a single page. NOTE: This information is not subject to public disclosure pursuant to HSC § 25506.
202. CHEMICAL LOCATION CONFIDENTIAL - EPCRA All businesses which are subject to the Emergency Planning and Community Right to Know Act (EPCRA) must check "Yes" to keep chemical location information confidential; otherwise, check "No".
203. MAP NUMBER If a map is included, enter the number of the map on which the location of the hazardous material is shown.
204. GRID NUMBER If grid coordinates are used, enter the grid coordinates of the map that correspond to the location of the hazardous material.
205. CHEMICAL NAME Enter the proper chemical name associated with the Chemical Abstract Service (CAS) number of the hazardous material. This should be the International Union of Pure and Applied Chemistry (IUPAC) name found on the Material Safety Data Sheet (MSDS). NOTE: If the chemical is a mixture, do not complete this field; instead, complete the "COMMON NAME" field.
206. TRADE SECRET - Check "Yes" if the information in this section is declared a trade secret, or "No" if it is not.
State requirement : If yes, and the business is not subject to EPCRA, disclosure of trade secret information is bound by HSC § 25511. **Federal requirement :** If yes, and the business is subject to EPCRA, disclosure of the designated Trade Secret information is bound by 40 CFR, and the business must submit a "Substantiation to Accompany Claims of Trade Secrecy" form (40 CFR 350.27) to U.S. EPA.
207. COMMON NAME Enter the common name or trade name of the hazardous material or mixture containing a hazardous material.
208. EHS Check "Yes" if the hazardous material is an Extremely Hazardous Substance (EHS), as defined in 40 CFR, Part 355, Appendix A. If the material is a mixture containing an EHS, leave this section blank and complete the section on hazardous components below.
209. CAS # Enter the Chemical Abstract Service number for the hazardous material. For mixtures, enter the CAS number of the mixture only if it has a number; otherwise, leave this blank and report CAS numbers of the individual hazardous components in the appropriate section below.
210. FIRE CODE HAZARD CLASSES This information shall be provided if the local fire chief deems it necessary and requests the CUPA or PA to collect it. A list of the hazard classes and instructions on how to determine which class a material falls under are found in the appendices of Article 80 of the Uniform Fire Code. If a material has more than one hazard class, include all. Contact CUPA or PA for guidance.
211. HAZARDOUS MATERIAL TYPE Check the one box that best describes the type of hazardous material: pure, mixture or waste. If the substance is a waste, check only that box. If the substance is a mixture or waste, complete the hazardous components section.
212. RADIOACTIVE Check "Yes" if the hazardous material is radioactive or "No" if it is not.
213. CURIES If the material is radioactive, report the activity in curies; use up to nine digits with a floating decimal point to report activity in curies.
214. PHYSICAL STATE Check the one box that best describes the state in which the hazardous material is handled: solid, liquid or gas.
215. LARGEST CONTAINER Enter the total capacity of the largest container in which the material is stored.
216. FEDERAL HAZARD CATEGORIES Check all categories that describe the physical and health hazards associated with the hazardous material. Fire: Flammable Liquids and Solids, Combustible Liquids, Pyrophorics, and Oxidizers.
Pressure Release: Explosives, Compressed Gases, and Blasting Agents.
Acute Health (Immediate): Highly Toxic, Toxic, Irritants, Sensitizers, Corrosives, and other chemicals with an adverse effect with short term exposure.
Reactive: Unstable Reactive, Organic Peroxides, Water Reactive, and Radioactive.
Chronic Health (Delayed): Carcinogens, Teratogens, Mutagens, and other chemicals with an adverse effect with long term exposure.
217. AVERAGE DAILY AMOUNT Calculate the average daily amount of the hazardous material or mixture containing a hazardous material, in each building or adjacent/ outside area. Calculations shall be based on the previous year's inventory of the material reported on this page. Total all daily amounts and divide by the number of days the chemical will be on site. If this is a material that has not previously been present at this location, the amount shall be the average daily amount you project to be on hand during the course of the year. This amount should be consistent with the units reported in box 221 and should not exceed that of maximum daily amount.
218. MAXIMUM DAILY AMOUNT Enter the maximum amount of each hazardous material or mixture containing a hazardous material, which is handled in a building or adjacent/outside area at any one time over the course of the year. This amount must contain at a minimum last year's inventory of the material reported on this page, with the reflection of additions, deletions, or revisions projected for the current year. This amount should be consistent with the units reported in box 221.
219. ANNUAL WASTE AMOUNT If the hazardous material being inventoried is a waste, provide an estimate of the annual amount handled.
220. STATE WASTE CODE If the material is a waste, enter the California 3-digit hazardous waste code from the Uniform Hazardous Waste Manifest.
221. UNITS Check the unit of measure that is most appropriate for the material being reported on this page: gallons, pounds, cubic feet or tons.
NOTE: If the material is a federally defined Extremely Hazardous Substance (EHS), all amounts must be reported in pounds. If material is a mixture containing an EHS, report the units that the material is stored in (gallons, pounds, cubic feet, or tons).
222. DAYS ON SITE List the total number of days during the year that the material is on site.
223. STORAGE CONTAINER Check all boxes that describe the type of storage containers in which the hazardous material is stored.
NOTE: If appropriate, you may choose more than one.
224. STORAGE PRESSURE Check the one box that best describes the pressure at which the hazardous material is stored.
225. STORAGE TEMPERATURE Check the one box that best describes the temperature at which the hazardous material is stored.
226. HAZARDOUS COMPONENTS 1-5 (% BY WEIGHT) Enter the percentage weight of the hazardous component in a mixture. If a range of percentages is available, report the highest percentage in that range. (Report components 2 - 5 in boxes 230, 234, 238, and 242.)
227. HAZARDOUS COMPONENTS 1-5 NAME When reporting a hazardous material mixture, list up to five chemical names of hazardous components in that mixture by percent weight (refer to MSDS or, in the case of trade secrets, refer to manufacturer). All hazardous components in the mixture present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, should be reported. If more than five hazardous components are present above these percentages, attach an additional sheet of paper to capture the required information. When reporting waste mixtures, list mineral and chemical composition. (Report components 2 - 5 in boxes 231, 235, 239, and 243.)
228. HAZARDOUS COMPONENTS 1-5 EHS Check "Yes" if the component of the mixture is considered an Extremely Hazardous Substance as defined in 40 CFR, Part 355. (Report components 2 - 5 in boxes 232, 236, 240, and 244.)
229. HAZARDOUS COMPONENTS 1-5 CAS List Chemical Abstract Service numbers of the hazardous components in the mixture. (Repeat for 2-5.)
246. LOCALLY COLLECTED INFORMATION Contact your local agency about if they require additional hazardous materials inventory information.

UNIFIED PROGRAM (UP) FORM

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (LACoCUPA Form 2731)

(one page per material per building or area)

ADD
 DELETE
 REVISE
 REPORTING YEAR 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)										3	
CHEMICAL LOCATION 201					SUB LOCATION 199			CHEMICAL LOCATION CONFIDENTIAL (EPCRA) <input type="checkbox"/> YES <input type="checkbox"/> NO 202			
FACILITY ID #										204	
MAP# (optional) 203							GRID# (optional)				

II. CHEMICAL INFORMATION

CHEMICAL NAME 205					TRADE SECRET <input type="checkbox"/> Yes <input type="checkbox"/> No 206				
If Subject to EPCRA, refer to instructions									
COMMON NAME 207					EHS* <input type="checkbox"/> Yes <input type="checkbox"/> No 208			RS* <input type="checkbox"/> Yes <input type="checkbox"/> No 246a	
CAS# 209					*If EHS or RS is "Yes", all amounts below must be in lbs.				
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210									
HAZARDOUS MATERIAL TYPE (Check one item only) <input type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input type="checkbox"/> c. WASTE 211					RADIOACTIVE <input type="checkbox"/> Yes <input type="checkbox"/> No 212			CURIES 213	
PHYSICAL STATE (Check one item only) <input type="checkbox"/> a. SOLID <input type="checkbox"/> b. LIQUID <input type="checkbox"/> c. GAS 214					LARGEST CONTAINER 215				
FED HAZARD CATEGORIES (Check all that apply) <input type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input type="checkbox"/> e. CHRONIC HEALTH 216									
AVERAGE DAILY AMOUNT 217			MAXIMUM DAILY AMOUNT 218			ANNUAL WASTE AMOUNT 219		STATE WASTE CODE 220	
UNITS* (Check one item only) <input type="checkbox"/> a. GALLONS <input type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS 221							DAYS ON SITE: 222		
STORAGE CONTAINER <input type="checkbox"/> a. ABOVE GROUND TANK <input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM <input type="checkbox"/> i. FIBER DRUM <input type="checkbox"/> m. GLASS BOTTLE <input type="checkbox"/> q. RAIL CAR <input type="checkbox"/> b. UNDERGROUND TANK <input type="checkbox"/> f. CAN <input type="checkbox"/> j. BAG <input type="checkbox"/> n. PLASTIC BOTTLE <input type="checkbox"/> r. OTHER <input type="checkbox"/> c. TANK INSIDE BUILDING <input type="checkbox"/> g. CARBOY <input type="checkbox"/> k. BOX <input type="checkbox"/> o. TOTE BIN <input type="checkbox"/> d. STEEL DRUM <input type="checkbox"/> h. SILO <input type="checkbox"/> l. CYLINDER <input type="checkbox"/> p. TANK WAGON 223									
STORAGE PRESSURE <input type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT 224									
STORAGE TEMPERATURE <input type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC 225									

#	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	RS 246b	CAS #
1	226	227	<input type="checkbox"/> Yes 228	<input type="checkbox"/> Yes	229
2	230	231	<input type="checkbox"/> Yes 232	<input type="checkbox"/> Yes	233
3	234	235	<input type="checkbox"/> Yes 236	<input type="checkbox"/> Yes	237
4	238	239	<input type="checkbox"/> Yes 240	<input type="checkbox"/> Yes	241
5	242	243	<input type="checkbox"/> Yes 244	<input type="checkbox"/> Yes	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information. 246

ADDITIONAL LOCALLY COLLECTED INFORMATION

If EPCRA, Please Sign Here
 (Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY				DATE RECEIVED		REVIEWED BY	
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA	

UNIFIED PROGRAM (UP) FORM
CalARP PROGRAM REGULATED SUBSTANCE REGISTRATION

THIS PAGE IS TO BE COMPLETED FOR A STATIONARY SOURCE THAT HANDLES A REGULATED SUBSTANCE (RS) IN A PROCESS AT OR ABOVE THE THRESHOLD QUANTITY. REGULATED SUBSTANCES (INCLUDING FEDERAL LISTED AND STATE LISTED REGULATED SUBSTANCES) MUST BE REGISTERED FOR THE PURPOSE OF COMPLYING WITH THE Cal ARP (CALIFORNIA ACCIDENTAL RELEASE PREVENTION) PROGRAM. THE OWNER OR OPERATOR SHALL COMPLETE A HAZARDOUS MATERIALS INVENTORY FORM AND A REGISTRATION FOR EACH REGULATED SUBSTANCE PER EACH PROCESS.

REASON FORM IS BEING SUBMITTED: <input type="checkbox"/> UPDATE <input type="checkbox"/> CORRECTION <input type="checkbox"/> DE-REGISTRATION <input type="checkbox"/> WITHDRAWAL					247
BUSINESS NAME					3
FACILITY ID# 1		USEPA FACILITY ID # 2		PROGRAM LEVEL <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	
NAME OF CORPORATE PARENT COMPANY 246d				DUN & BRADSTREET 106	
PERSON RESPONSIBLE FOR RMP (First Name, Last Name)			TITLE		E-MAIL ADDRESS (Optional)
PARENT COMPANY E-MAIL ADDRESS (Optional) 246f			COMPANY HOMEPAGE ADDRESS (Optional) 246g		
NAME OF RMP PREPARER			PHONE NUMBER 246h		
RMP PREPARER MAILING ADDRESS 246i			PHONE NUMBER FOR PUBLIC INQUIRIES (Optional) 246j		
LATITUDE 246k		LONGITUDE 246l		METHOD USED TO OBTAIN LATITUDE AND LONGITUDE 246m	
LOCATION DESCRIPTION 246n			NUMBER OF EMPLOYEES 246o		PROCESS NAICS 107a
LEPC COMMITTEE (Optional) 246p			OSHA VOLUNTARY PROTECTION PROGRAM STATUS (Optional) 246q		
DOES THE FACILITY HAVE SUBSTANCES LISTED IN 40 CFR 355 APPENDIX A (EHS)? YES <input type="checkbox"/> NO 208			DO ANY PROCESSES REQUIRE A CLEAN AIR ACT TITLE V OPERATING PERMIT? <input type="checkbox"/> YES <input type="checkbox"/> NO 246r		PERMIT NO. 246s
IS FACILITY SUBJECT TO 29CFR 1910.119/CCR 8 SEC 5189(PSM) ? <input type="checkbox"/> YES <input type="checkbox"/> NO 246t			LAST SAFETY INSPECTION DATE AGENCY 246u		
CHEMICAL NAME 205			CAS# 209		
MAXIMUM DAILY AMOUNT 218a			UNITS IN POUNDS 221		
PROCESS DESCRIPTION 246v					
PRINCIPAL EQUIPMENT 246w					
CERTIFICATION					
I, the owner or operator of the aforementioned business, hereby certify that the registration information provided above is true, accurate, and complete to the best of my knowledge based upon reasonable inquiry. I am fully aware that this certification executed on the date indicated below is made under penalty of perjury under the laws of the State of California.					
OWNER/OPERATOR NAME 246x			OWNER/OPERATOR TITLE 246y		
OWNER/OPERATOR SIGNATURE			DATE		246z

UNIFIED PROGRAM (UP) FORM
CalARP PROGRAM REGULATED SUBSTANCE REGISTRATION

THIS PAGE IS TO BE COMPLETED FOR A STATIONARY SOURCE THAT HANDLES A REGULATED SUBSTANCE (RS) IN A PROCESS AT OR ABOVE THE THRESHOLD QUANTITY. REGULATED SUBSTANCES (INCLUDING FEDERAL LISTED AND STATE LISTED REGULATED SUBSTANCES) MUST BE REGISTERED FOR THE PURPOSE OF COMPLYING WITH THE Cal ARP (CALIFORNIA ACCIDENTAL RELEASE PREVENTION) PROGRAM. THE OWNER OR OPERATOR SHALL COMPLETE A HAZARDOUS MATERIALS INVENTORY FORM AND A REGISTRATION FOR EACH REGULATED SUBSTANCE PER EACH PROCESS.

REASON FORM IS BEING SUBMITTED:		<input type="checkbox"/> UPDATE	<input type="checkbox"/> CORRECTION	<input type="checkbox"/> DE-REGISTRATION	<input type="checkbox"/> WITHDRAWAL	247
BUSINESS NAME						3
FACILITY ID#	1	USEPA FACILITY ID #	2	PROGRAM LEVEL	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	246c
NAME OF CORPORATE PARENT COMPANY			246d	DUN & BRADSTREET		106
PERSON RESPONSIBLE FOR RMP (First Name, Last Name)			TITLE		E-MAIL ADDRESS (Optional)	246e
PARENT COMPANY E-MAIL ADDRESS (Optional)			246f	COMPANY HOMEPAGE ADDRESS (Optional)		246g
NAME OF RMP PREPARER			PHONE NUMBER			246h
RMP PREPARER MAILING ADDRESS			246i	PHONE NUMBER FOR PUBLIC INQUIRIES (Optional)		246j
LATITUDE	246k	LONGITUDE	246l	METHOD USED TO OBTAIN LATITUDE AND LONGITUDE		246m
LOCATION DESCRIPTION			246n	NUMBER OF EMPLOYEES	246o	PROCESS NAICS
LEPC COMMITTEE (Optional)			246p	OSHA VOLUNTARY PROTECTION PROGRAM STATUS (Optional)		246q
DOES THE FACILITY HAVE SUBSTANCES LISTED IN 40 CFR 355 APPENDIX A (EHS)? <input type="checkbox"/> YES <input type="checkbox"/> NO			208	DO ANY PROCESSES REQUIRE A CLEAN AIR ACT TITLE V OPERATING PERMIT? <input type="checkbox"/> YES <input type="checkbox"/> NO		246r
IS FACILITY SUBJECT TO 29CFR 1910.119/CCR 8 SEC 5189(PSM)? <input type="checkbox"/> YES <input type="checkbox"/> NO			246t	LAST SAFETY INSPECTION DATE		246u
CHEMICAL NAME			205	CAS#		209
MAXIMUM DAILY AMOUNT			218a	UNITS IN POUNDS		221
PROCESS DESCRIPTION						246v
PRINCIPAL EQUIPMENT						246w

CERTIFICATION

I, the owner or operator of the aforementioned business, hereby certify that the registration information provided above is true, accurate, and complete to the best of my knowledge based upon reasonable inquiry. I am fully aware that this certification executed on the date indicated below is made under penalty of perjury under the laws of the State of California.

OWNER/OPERATOR NAME			246x	OWNER/OPERATOR TITLE			246y
OWNER/OPERATOR SIGNATURE				DATE		246z	
OFFICIAL USE ONLY			DATE RECEIVED		REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA	

CalARP PROGRAM REGULATED SUBSTANCE REGISTRATION

This page is to be completed for a Stationary Source that handles a Regulated Substance (RS) in a process at or above the threshold quantity. Regulated Substances (including Federal and State Listed Regulated Substances) must be registered for the purpose of complying with the California Accidental Release Prevention (Cal ARP) program. The owner or operator shall complete a Hazardous Materials Inventory – Chemical Description page and a Regulated Substance Registration for each Regulated Substance per process. Contact your local agency (CUPA or PA) for any additional assistance.

Note: A list of Federal and State Regulated Substances is attached for your reference.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This unique number identifies your facility.
2. EPA ID NUMBER Enter your facility's 12-character EPA identification number issued by the USEPA.
3. BUSINESS NAME Enter the full legal name of the business.
106. DUN & BRADSTREET Enter the Dun and Bradstreet number of the Principal Company or entity which owns at least 50 percent of the voting stock. The Dun and Bradstreet number allows your business to be cross-referenced to various business information. You may be able to obtain this number from your finance department. If your business does not have this information, contact Dun and Bradstreet at (610) 882-7748 or via the internet at www.dnb.com.
- 107a. PROCESS NAICS CODE Enter the specific *North American Industry Classification System Code* for the process using, treating, storing, producing, disposing, or otherwise handling regulated substances.
205. CHEMICAL NAME Enter the proper chemical name associated with the Chemical Abstract Service (CAS) number of the hazardous material. This should be the International Union of Pure and Applied Chemistry (IUPAC) name found on the Material Safety Data Sheet (MSDS).
208. EPCRA SECTION 355 Check "Yes" if the stationary source is subject to Part 355 of Title 40 of CFR.
209. CAS # Enter the Chemical Abstract Service number for the hazardous material.
- 218a. MAXIMUM DAILY AMOUNT Enter the maximum amount of hazardous material or mixture containing a hazardous material which is handled in the process at any one time over the course of the year.
221. UNITS IN POUNDS Leave this box blank. Note: All Regulated Substances must be reported in pounds to two significant digits.
- 246c. PROGRAM LEVEL Indicate the proper *Program Level* this process falls under. Mark either Program 1, 2, or 3 to identify with which program the process complies.
- 246d. NAME OF CORPORATE PARENT COMPANY Enter the legal name of the Principal Company or entity which owns at least 50 percent of the voting stock.
- 246e. PERSON RESPONSIBLE FOR RMP Enter name, title and (optional) e-mail address of the person designated as responsible for the RMP.
- 246f. PARENT COMPANY E-MAIL ADDRESS (Optional) Enter the e-mail address of the parent company (optional information).
- 246g. COMPANY HOMEPAGE ADDRESS (Optional) Enter the web address of the company (optional information).
- 246h. NAME / PHONE NUMBER OF RMP PREPARER Enter the contractor's name and phone number who prepared the RMP (if any).
- 246i. RMP PREPARER MAILING ADDRESS Enter the mailing address of the contractor that prepared the RMP (if any).
- 246j. PHONE NUMBER FOR PUBLIC INQUIRIES (Optional) Enter a phone number that the public may call if they have questions about your facility or your RMP (optional information).
- 246k. LATITUDE Enter the degrees of latitude where the chemical process is located. The latitude of your facility can be determined in several ways, including through the use of U.S. Geological Survey (USGS), global positioning system (GPS) receivers, and web-based siting tools. Latitude is the degrees north or south of the equator. Latitude is measured in degrees, minutes, and seconds. We recommend the use of USGS topographical quadrangle maps to make this determination. When using USGS, the valid latitudes for LA County range from 33°17'53N to 34°49'14N. Be sure the latitude fits this range.
- 246l. LONGITUDE Enter the degrees of longitude where the chemical process is located. The longitude of your facility can be determined in several ways, including through the use of USGS, GPS receivers, and web-based siting tools. Longitude is the degrees east or west of the prime meridian. Longitude is measured in degrees, minutes, and seconds. We recommend the use of USGS topographical quadrangle maps to make this determination. When using USGS, the valid longitudes for LA County range from 117°38'39W to 118°56'39W. Be sure the latitude fits this range.
- 246m. METHOD USED TO OBTAIN LATITUDE AND LONGITUDE Source of latitude and longitude information.
- 246n. LOCATION DESCRIPTION A description of location that latitude and longitude represent.
- 246o. NUMBER OF EMPLOYEES The number of full time employees at the stationary source.
- 246p. LEPC COMMITTEE (Optional) Enter the Local Emergency Planning Committee to which the facility belongs (optional information).
- 246q. OSHA VOLUNTARY PROTECTION PROGRAM STATUS (Optional) Enter whether you participate in this OSHA program and the status of your facility (optional information). Program levels are Star, Merit, or Star Demonstration.
- 246r. CAA TITLE V State and local operating permit programs are required under Title V of the Clean Air Act (40 CFR Part 70). Title V requires major sources of air pollution to receive permits, pay fees to cover cost of administering the program, and sign a binding certification of compliance on all permit applications and documents. Check the appropriate box, "yes" or "no."
- 246s. PERMIT NUMBER If you have a Title V operating permit, enter the permit number.
- 246t. OSHA PSM The OSHA Process Safety Management Standard, codified at 29 CFR 1910.119, is similar to the Program 3 prevention program, and is designed to protect workers from the effects of accidental releases of hazardous substances. **Note:** This question covers all processes at your facility; if any process at your facility is subject to OSHA PSM, you must answer yes even if the PSM process does not involve a Regulated Substance. Answer the question either "yes" or "no."
- 246u. LAST SAFETY INSPECTION Enter the date of the last safety inspection of your facility and indicate the Agency (OSHA, State OSHA, EPA, State EPA, Fire Dept., etc.) that performed the inspection.
- 246v. PROCESS DESCRIPTION Describe the *process* and/or operations involved in the use, treatment, storage, production, disposal or otherwise handling of the regulated substances (include process pressures and temperature, and whether it is a raw material or an intermediate). **Note:** Any group of interconnected vessels or separate vessels, located such that a regulated substance could be involved in a potential release, is considered a single process.
- 246w. PRINCIPAL EQUIPMENT List the equipment and/or components used in the process involving the Regulated Substance.
- 246x. NAME OF OWNER / OPERATOR The full name of the owner/operator who signed the registration page.
- 246y. TITLE Enter the title of the person signing the page.
- 246z. DATE Enter the date the page was signed.
247. REASON FORM IS BEING SUBMITTED Check "Update" box if the RMP is submitted for 5-year update, process change that requires a revised PHA or hazard review or any reasons discussed in 19 CCR 2745.10; check "Correction" box if there is change or error in administrative information, a new accident history information, or change in emergency contact information; check "De-registration" box if the facility is no longer subject to the CalARP Program; check "Withdrawal" box if the facility was erroneously considered subject to the CalARP Program.

CaIARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis	CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis
Acetaldehyde	75-07-0	10,000	g	Crotonaldehyde (2-Butenal)	4170-30-3	1,000	b
* Acetone Cyanohydrin	75-86-5	1,000		Cyanogen (Ethanedinitrile)	460-19-5	10,000	f
Acetone Thiosemicarbazide	1752-30-3	1,000/10,000 ¹		Cyanogen Bromide	506-68-3	500/10,000 ¹	
Acetylene (Ethyne)	74-86-2	10,000	f	Cyanogen Chloride	506-77-4	10,000	c
Acrolein (2-Propenal)	107-02-8	500	b	Cyanogen Iodide	506-78-5	1,000/10,000 ¹	
Acrylamide	79-06-1	1,000/10,000 ¹		Cyanuric Fluoride	675-14-9	100	
Acrylonitrile (2-Propenenitrile)	107-13-1	10,000	b	Cycloheximide	66-81-9	100/10,000 ¹	
Acrylyl Chloride (2-Propenoyl Chloride)	814-68-6	100	b	Cyclohexylamine (Cyclohexanamine)	108-91-8	10,000	b
Aldicarb	116-06-3	100/10,000 ¹		Cyclopropane	75-19-4	10,000	f
Aldrin	309-00-2	500/10,000 ¹		Decaborane (14)	17702-41-9	500/10,000 ¹	
Allyl Alcohol (2-Propen-1-ol)	107-18-6	1,000	b	Dialfor	10311-84-9	100/10,000 ¹	
Allylamine (2-Propen-1-Amine)	107-11-9	500	b	Diborane	19287-45-7	100	b
Aluminum Phosphide	20859-73-8	500		Dichlorosilane (Silane, Dichloro-)	4109-96-0	10,000	f
Aminopterin	54-62-6	500/10,000 ¹		* Diepoxybutane	1464-53-5	500	
Amiton Oxalate	3734-97-2	100/10,000 ¹		Diffluoroethane (Ethane, 1,1-Difluoro-)	75-37-6	10,000	f
Ammonia, Anhydrous ²	7664-41-7	500	a,b	Digitoxin	71-63-6	100/10,000 ¹	
Ammonia, Aqueous	7664-41-7	500	a,b	Digoxin	20830-75-5	10/10,000 ¹	
* Aniline	62-53-3	1,000		Dimethoate	60-51-5	500/10,000 ¹	
Antimycin A	1397-94-0	1,000/10,000 ¹		Dimethyl-p-Phenylenediamine	99-98-9	10/10,000 ¹	
ANTU (1-Naphthalenylthiourea)	86-88-4	500/10,000 ¹		* Dimethyl Sulfate	77-78-1	500	
Arsenic Pentoxide	1303-28-2	100/10,000 ¹		Dimethylamine (Methanamine, N-Methyl-)	124-40-3	10,000	f
Arsenous Oxide (Arsenic Trioxide)	1327-53-3	100/10,000 ¹		Dimethyldichlorosilane	75-78-5	500	b
Arsenous Trichloride	7784-34-1	500	b	Dimethylhydrazine (1,1-Dimethylhydrazine)	57-14-7	1,000	b
Arsine (Arsenic Hydride)	7784-42-1	100	b	2,2-Dimethylpropane (Propane, 2,2-Dimethyl-)	463-82-1	10,000	f
Azinphos-Ethyl	2642-71-9	100/10,000 ¹		Dimetilan	644-64-4	500/10,000 ¹	
Azinphos-Methyl [Guthion]	86-50-0	10/10,000 ¹		Dinitrocresol (4,6-Dinitro-o-Cresol)	534-52-1	10/10,000 ¹	
Benzene, 1-(Chloromethyl)-4-Nitro-	100-14-1	500/10,000 ¹		Dinoseb	88-85-7	100/10,000 ¹	
Benzenearsonic Acid	98-05-5	10/10,000 ¹		Dinoterb	1420-07-1	500/10,000 ¹	
Benzimidazole, 4,5-Dichloro-2-(Trifluoromethyl)	3615-21-2	500/10,000 ¹		Diphacinone	82-66-6	10/10,000 ¹	
* Benzotrichloride (Benzoictrichloride)	98-07-7	100		* Disulfoton	298-04-4	500	
Bicyclo(2.2.1) Heptane-2-Carbonitrile, 5-Chloro-6-(((Methylamino)Carbonyl)Oxy)Imino-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-	15271-41-7	500/10,000 ¹		Dithiazanine Iodide	514-73-8	500/10,000 ¹	
Bis(Chloromethyl) Ketone	534-07-6	10/10,000 ¹		Dithiobiuret	541-53-7	100/10,000 ¹	
Bitoscanate	4044-65-9	500/10,000 ¹		Emetite, Dihydrochloride	316-42-7	1/10,000 ¹	
Boron Trichloride (Trichloroborane)	10294-34-5	500	b	Endosulfan	115-29-7	10/10,000 ¹	
Boron Trifluoride (Trifluoroborane)	7637-07-2	500	b	Endothion	2778-04-3	500/10,000 ¹	
Boron Trifluoride Compound w/Methyl Ether(1:1) (Boron, Trifluoro (Oxybis (Metane))-,T-4-	353-42-4	1,000	b	Endrin	72-20-8	500/10,000 ¹	
Bromadiolone	28772-56-7	100/10,000 ¹		Epichlorohydrin ((Chloromethyl) Oxirane)	106-89-8	1,000	b
Bromine	7726-95-6	500	a,b	EPN (Phenylphosphonothioic Acid o-Ethyl-(4-Nitrophenyl) Ester)	2104-64-5	100/10,000 ¹	
Bromotrifluoroethylene (Ethene, Bromotrifluoro-)	598-73-2	10,000	f	Ergocalciferol	50-14-6	1,000/10,000 ¹	
1,3-Butadiene	106-99-0	10,000	f	Ergotamine Tartrate	379-79-3	500/10,000 ¹	
Butane	106-97-8	10,000	f	Ethane	74-84-0	10,000	f
Butene	25167-67-3	10,000	f	Ethyl Acetylene (1-Butyne)	107-00-6	10,000	f
1-Butene	106-98-9	10,000	f	Ethyl Chloride (Ethane, Chloro-)	75-00-3	10,000	f
2-Butene	107-01-7	10,000	f	Ethyl Ether (Ethane, 1,1'-Oxybis-)	60-29-7	10,000	g
2-Butene-cis	590-18-1	10,000	f	Ethyl Mercaptan (Ethanethiol)	75-08-1	10,000	g
2-Butene-trans (2-Butene, (E))	624-64-6	10,000	f	Ethyl Nitrite (Nitrous Acid, Ethyl Ester)	109-95-5	10,000	f
Cadmium Oxide	1306-19-0	100/10,000 ¹		Ethylamine (Ethanamine)	75-04-7	10,000	f
Cadmium Stearate	2223-93-0	1,000/10,000 ¹		Ethylene (Ethene)	74-85-1	10,000	f
Calcium Arsenate	7778-44-1	500/10,000 ¹		Ethylene Fluorohydrin	371-62-0	10	
Camphechlor	8001-35-2	500/10,000 ¹		Ethylene Oxide (Oxirane)	75-21-8	1,000	a,b
Cantharidin	56-25-7	100/10,000 ¹		Ethylenediamine (1,2-Ethanediamine)	107-15-3	10,000	b
Carbachol Chloride	51-83-2	500/10,000 ¹		Ethylenimine (Aziridine)	151-56-4	500	b
Carbamic Acid, Methyl-,o-(((2,4-Dimethyl-1,3-Dithiolan-2-YL) Methylene)Amino)-	26419-73-8	100/10,000 ¹		Fenamiphos	22224-92-6	10/10,000 ¹	
Carbofuran	1563-66-2	10/10,000 ¹		Fluonitil	4301-50-2	100/10,000 ¹	
Carbon Disulfide	75-15-0	10,000	b	Fluorine	7782-41-4	500	b
Carbon Oxy sulfide (Carbon Oxide Sulfide (COS))	463-58-1	10,000	f	Fluoroacetamide	640-19-7	100/10,000 ¹	
Chlorine	7782-50-5	100	a,b	Fluoroacetic Acid	144-49-0	10/10,000 ¹	
Chlorine Dioxide (Chlorine Oxide (ClO2))	10049-04-4	1,000	c	Fluoroacetyl Chloride	359-06-8	10	
Chlorine Monoxide (Chlorine Oxide)	7791-21-1	10,000	f	Fluorouracil	51-21-8	500/10,000 ¹	
Chlormequat Chloride	999-81-5	100/10,000 ¹		Formaldehyde ²	50-00-0	500	b
Chloroacetic Acid	79-11-8	100/10,000 ¹		Formetanate Hydrochloride	23422-53-9	500/10,000 ¹	
Chloroform (Methane, trichloro-)	67-66-3	10,000	b	Formparanate	17702-57-7	100/10,000 ¹	
Chloromethyl Ether (Methane,Oxybis(chloro-)	542-88-1	100	b	Fuberidazole	3878-19-1	100/10,000 ¹	
Chloromethyl Methyl Ether (Chloromethoxymethane)	107-30-2	100	b	Furan	110-00-9	500	b
Chlorophacinone	3691-35-8	100/10,000 ¹		Gallium Trichloride	13450-90-3	500/10,000	
1-Chloropropylene (1-Propene, 1-Chloro-)	590-21-6	10,000	g	Hydrazine	302-01-2	1,000	b
2-Chloropropylene (1-Propene, 2-Chloro-)	557-98-2	10,000	g	Hydrochloric Acid (conc 37% or greater)	7647-01-0	15,000	d
Chloroxuron	1982-47-4	500/10,000 ¹		Hydrocyanic Acid	74-90-8	100	a,b
Chromic Chloride	10025-73-7	1/10,000 ¹		Hydrogen	1333-74-0	10,000	f
Cobalt,((2,2'-(1,2-Ethanediylbis(Nitrilomethylidene)))	62207-76-5	100/10,000 ¹		Hydrogen Chloride,(Gas)	7647-01-0	500	a
Bis(6-Fluorophenolato)(2-)-N,N',O,O')-	10210-68-1	10/10,000 ¹		Hydrogen Cyanide (Hydrocyanic Acid), (Gas)	74-90-8	100	
Cobalt Carbonyl	64-86-8	10/10,000 ¹		Hydrogen Fluoride/Hydrofluoric Acid (Hydrofluoric Acid)	7664-39-3	100	a,b
Colchicine	56-72-4	100/10,000 ¹		Hydrogen Selenide	7783-07-5	10	b
Coumaphos	5836-29-3	500/10,000 ¹		Hydrogen Sulfide	7783-06-4	500	a,b
Coumatetralyl	95-48-7	1,000/10,000 ¹		* Hydroquinone ⁴	123-31-9	500/10,000 ¹	
o-Cresol	535-89-7	100/10,000 ¹		Iron, Pentacarbonyl-(Iron Carbonyl (Fe(CO)5, (TB-5-11)-)	13463-40-6	100	b
Crimidine	123-73-9	1,000	b	Isobenzan	297-78-9	100/10,000 ¹	
Crotonaldehyde ((E)-(2-Butenal,(E))-)				Isobutane (Propane, 2-Methyl)	75-28-5	10,000	f

CalARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis	CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis
Isobutyronitrile (2-Methylpropanenitrile)	78-82-0	1,000	b	Phenylhydrazine Hydrochloride	59-88-1	1,000/10,000 ¹	
Isocyanic Acid,3,4-Dichlorophenyl Ester	102-36-3	500/10,000 ¹		Phenylmercury Acetate	62-38-4	500/10,000 ¹	
Isodrin	465-73-6	100/10,000 ¹		Phenylsilatrane	2097-19-0	100/10,000 ¹	
Isopentane (Butane, 2-Methyl-)	78-78-4	10,000	g	Phenylthiourea	103-85-5	100/10,000 ¹	
Isophorone Diisocyanate	4098-71-9	100		* Phorate	298-02-2	10	
Isoprene (1,3-Butadiene, 2-Methyl-)	78-79-5	10,000	g	Phosacetim	4104-14-7	100/10,000 ¹	
Isopropyl Chloride (Propane, 2-Chloro-)	75-29-6	10,000	g	Phosfolan	947-02-4	100/10,000 ¹	
Isopropyl Chloroformate (Carbonochloridic Acid, 1-Methylethyl Ester)	108-23-6	1,000	b	Phosgene (Carbonyl Chloride)			
Isopropylamine (2-Propanamine)	75-31-0	10,000	g	(Carbonic Dichloride)	75-44-5	10	a,b
Leptophos	21609-90-5	500/10,000 ¹		Phosmet	732-11-6	10/10,000 ¹	
* Lewisite (Chlorovinylarsine Dichloride)	541-25-3	10		Phosphine (Hydrogen Phosphide)	7803-51-2	500	b
Lindane	58-89-9	1,000/10,000 ¹		* Phosphonothioic Acid, Methyl-S-(2-(Bis (1-Methylethyl)Amino)Ethyl) O-Ethyl Ester	50782-69-9	100	
Lithium Hydride	7580-67-8	100		Phosphorus	7723-14-0	100	
Malononitrile	109-77-3	500/10,000 ¹		Phosphorus Oxychloride	10025-87-3	500	b
* Manganese,Tricarbonyl				Phosphorus Pentachloride	10026-13-8	500	
Methylcyclopentadienyl	12108-13-3100			Phosphorus Trichloride	7719-12-2	1,000	b
Mercuric Acetate	1600-27-7	500/10,000 ¹		Physostigmine	57-47-6	100/10,000 ¹	
Mercuric Chloride	7487-94-7	500/10,000 ¹		Physostigmine, Salicylate (1:1)	57-64-7	100/10,000 ¹	
Mercuric Oxide	21908-53-2	500/10,000 ¹		Picrotoxin	124-87-8	500/10,000 ¹	
Methacrylonitrile (Methylacrylonitrile)				Piperidine	110-89-4	1,000	b
(2-Methyl-2-Propenenitrile)	126-98-7	500	b	Potassium Arsenite	10124-50-2	500/10,000 ¹	
Methacryloyl Chloride	920-46-7	100		Potassium Cyanide	151-50-8	100	
Methacryloyloxyethyl Isocyanate	30674-80-7	100		Potassium Silver Cyanide	506-61-6	500	
Methamidophos	10265-92-6	100/10,000 ¹		Promecarb	2631-37-0	500/10,000 ¹	
Methane	74-82-8	10,000	f	Propadiene (1,2-Propadiene)	463-49-0	10,000	f
Methanesulfonyl Fluoride	558-25-8	1,000		Propane	74-98-6	10,000	f
Methidathion	950-37-8	500/10,000 ¹		Propargyl Bromide (3-Bromopropyne)	106-96-7	10	
Methiocarb (Mercaptodimethur)	2032-65-7	500/10,000 ¹		* beta-Propiolactone	57-57-8	500	
Methylol	16752-77-5	500/10,000 ¹		Propionitrile (Propanenitrile)(Ethyl Cyanide)	107-12-0	500	b
Methoxyethylmercuric Acetate	151-38-2	500/10,000 ¹		Propiophenone, 4'-Amino-	70-69-9	100/10,000 ¹	
2-Methyl-1-Butene	563-46-2	10,000	g	Propyl Chloroformate			
3-Methyl-1-Butene	563-45-1	10,000	f	(Carbonochloridic Acid, Propylester)	109-61-5	500	b
Methyl 2-Chloroacrylate	80-63-7	500		Propylene (1-Propene)	115-07-1	10,000	f
Methyl Bromide (Bromomethane)	74-83-9	1,000		Propylene Oxide (Methyloxirane)	75-56-9	10,000	b
Methyl Chloride (Methane, Chloro-)	74-87-3	10,000	a	Propyleneimine (2-Methylaziridine)	75-55-8	10,000	b
Methyl Chloroformate				Propyne (1-Propyne)	74-99-7	10,000	f
(Carbonochloridic Acid, Methyl Ester)	79-22-1	500	b	Prothoate	2275-18-5	100/10,000 ¹	
Methyl Ether (Methane, Oxybis-)	115-10-6	10,000	f	Pyrene	129-00-0	1,000/10,000 ¹	
Methyl Formate (Formic Acid, Methyl Ester)	107-31-3	10,000	g	Pyridine, 4-Amino-	504-24-5	500/10,000 ¹	
Methyl Hydrazine	60-34-4	500	b	Pyridine, 4-Nitro-, 1-Oxide	1124-33-0	500/10,000 ¹	
Methyl Isocyanate (Isocyanatomethane)	624-83-9	500	a,b	Pyriminil	53558-25-1	100/10,000 ¹	
Methyl Isothiocyanate	556-61-6	500		Salcomine	14167-18-1	500/10,000 ¹	
Methyl Mercaptan (Methanethiol) (Thiomethanol)	74-93-1	500	b	* Sarin	107-44-8	10	
Methyl Parathion (Parathion Methyl)	298-00-0	100/10,000 ¹		Selenious Acid	7783-00-8	1,000/10,000 ¹	
Methyl Phosphonic Dichloride	676-97-1	100		Semicarbazide Hydrochloride	563-41-7	1,000/10,000 ¹	
Methyl Thiocyanate (Thiocyanic Acid, Methyl Ester)	556-64-9	10,000	b	Silane	7803-62-5	10,000	f
Methyl Vinyl Ketone	78-94-4	10		Sodium Arsenate	7631-89-2	1,000/10,000 ¹	
Methylamine (Methanamine)	74-89-5	10,000	f	Sodium Arsenite	7784-46-5	500/10,000 ¹	
Methylmercuric Dicyanamide	502-39-6	500/10,000 ¹		Sodium Azide (Na (N ₃))	26628-22-8	500	
2-Methylpropene (1-Propene, 2-Methyl-)	115-11-7	10,000	f	Sodium Cacodylate	124-65-2	100/10,000 ¹	
Methyltrichlorosilane (Trichloromethylsilane)	75-79-6	500	b	Sodium Cyanide (Na (CN))	143-33-9	100	
Metolcarb	1129-41-5	100/10,000 ¹		Sodium Fluoroacetate	62-74-8	10/10,000 ¹	
Mexacarbonate	315-18-4	500/10,000 ¹		Sodium Selenate	13410-01-0	100/10,000 ¹	
Mitomycin C	50-07-7	500/10,000 ¹		Sodium Selenite	10102-18-8	100/10,000 ¹	
Monocrotophos	6923-22-4	10/10,000 ¹		Sodium Tellurite	10102-20-2	500/10,000 ¹	
Muscimol (5-(Aminomethyl)-3-Isoxazolol)	2763-96-4	500/10,000 ¹		Stannane, Acetoxytriphenyl-	900-95-8	500/10,000 ¹	
* Mustard Gas (2,2'- Dichloroethyl Sulfide)	505-60-2	500		Strychnine	57-24-9	100/10,000 ¹	
Nickel Carbonyl (Nickel Tetracarbonyl)	13463-39-3	1	b	Strychnine, Sulfate	60-41-3	100/10,000 ¹	
Nicotine Sulfate	65-30-5	100/10,000 ¹		Sulfur Dioxide (Anhydrous)	7446-09-5	500	a,b
Nitric Acid	7697-37-2	1,000	b	Sulfur Tetrafluoride	7783-60-0	100	b
Nitric Oxide (Nitrogen Monoxide (NO))	10102-43-9	100		* Sulfuric Acid ³	7664-93-9	1,000	
* Nitrobenzene	98-95-3	10,000		* Tabun	77-81-6	10	
Nitrogen Dioxide	10102-44-0	100		Tellurium Hexafluoride	7783-80-4	100	
* Nitrogen Mustard (Mechlorethamine)	51-75-2	10		Tetrafluoroethylene (Ethene, Tetrafluoro-)	116-14-3	10,000	f
Norbormide	991-42-4	100/10,000 ¹		Tetramethyllead (Tetramethylplumbane)	75-74-1	100	b
Oleum (Fuming Sulfuric Acid) (Sulfuric Acid, mixture with Sulfur Trioxide)	8014-95-7	10,000	e	Tetramethylsilane (Silane, Tetramethyl-)	75-76-3	10,000	g
Organorhodium Complex (PMN-82-147)	MIXTURE	10/10,000 ¹		Tetranitromethane (Methane, Tetranitro-)	509-14-8	500	b
Quabain	630-60-4	100/10,000 ¹		Thallium Sulfate	10031-59-1	100/10,000 ¹	
Oxamyl	23135-22-0	100/10,000 ¹		Thalious Carbonate (Thallium (1) Carbonate)	6533-73-9	100/10,000 ¹	
Ozone	10028-15-6	100		Thalious Chloride (Thallium Chloride)	7791-12-0	100/10,000 ¹	
Paraquat Methosulfate	2074-50-2	10/10,000 ¹		Thalious Malonate (Thallium Malonate)	2757-18-8	100/10,000 ¹	
Paraquat (Paraquat Dichloride)	1910-42-5	10/10,000 ¹		Thalious Sulfate	7446-18-6	100/10,000 ¹	
Paris Green (Cupric Acetoarsenite)	12002-03-8	500/10,000 ¹		Thiocarbazine	2231-57-4	1,000/10,000 ¹	
Pentaborane	19624-22-7	500		Thiofanox	39196-18-4	100/10,000 ¹	
Pentadecylamine	2570-26-5	100/10,000 ¹		Thiosemicarbazide	79-19-6	100/10,000 ¹	
1,3-Pentadiene	504-60-9	10,000	f	Thiourea, (2-Chlorophenyl)-	5344-82-1	100/10,000 ¹	
Pentane	109-66-0	10,000	g	Thiourea, (2-Methylphenyl)-	614-78-8	500/10,000 ¹	
1-Pentene	109-67-1	10,000	g	Titanium Tetrachloride	7550-45-0	100	b
2-Pentene, (E)-	646-04-8	10,000	g	Toluene-2,6-Diisocyanate			
2-Pentene, (Z)-	627-20-3	10,000	g	(1,3-Diisocyanato-2-Methylbenzene) ⁵	91-08-7	100	a
Peracetic Acid				Toluene-2,4-Diisocyanate			
(Ethaneperoxyic Acid) (Peroxyacetic Acid)	79-21-0	500	b	(2,4-Diisocyanato-1-Methylbenzene) ⁵	584-84-9	500	a
Perchloromethylmercaptan				Toluene Diisocyanate (unspecified isomer)			
(Trichloromethanesulfonyl Chloride)	594-42-3	500	b	(Benzene,1,3-Diisocyanatomethyl-) ⁵	26471-62-5	10,000	a
Phenol	108-95-2	500/10,000 ¹		Triamphos	1031-47-6	500/10,000 ¹	
Phenol, 2,2'-Thiobis(4-Chloro-6-Methyl)	4418-66-0	100/10,000 ¹		Trichloro(Chloromethyl)Silane	1558-25-4	100	
Phenol, 3-(1-Methylethyl)-, Methylcarbamate)	64-00-6	500/10,000 ¹		Trichloro(Dichlorophenyl)Silane	27137-85-5	500	
Phenoxarsine, 10, 10' - Oxydi-	58-36-6	500/10,000 ¹		Trichlorosilane (Silane, Trichloro-)	10025-78-2	10,000	g
* Phenylchloroarsine				Triethoxysilane	998-30-1	500	
(Dichlorophenylarsine) (Lewisite Variant)	696-28-6	500		Trifluorochloroethylene	79-38-9	10,000	f
				Trimethylamine (Methanamine, N,N-dimethyl-)	75-50-3	10,000	f
				Trimethylchlorosilane (Chlorotrimethylsilane)	75-77-4	1,000	b
				Trimethylolpropane Phosphite	824-11-3	100/10,000 ¹	

CalARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis
Trimethyltin Chloride	1066-45-1	500/10,000 ¹	
Triphenyltin Chloride	639-58-7	500/10,000 ¹	
* Tris(2-Chloroethyl)Amine	555-77-1	100	
Valinomycin	2001-95-8	1,000/10,000 ¹	
Vanadium Pentoxide	1314-62-1	100/10,000 ¹	
Vinyl Acetate Monomer (Vinyl Acetate) (Acetic Acid, Ethenyl Ester)	108-05-4	1,000	b
Vinyl Acetylene (1-Buten-3-Yne)	689-97-4	10,000	f
Vinyl Chloride (Ethene, Chloro-)	75-01-4	10,000	a,f
Vinyl Ethyl Ether (Ethene, Ethoxy-)	109-92-2	10,000	g
Vinyl Fluoride (Ethene, Fluoro-)	75-02-5	10,000	f
Vinyl Methyl Ether (Ethene, Methoxy-)	107-25-5	10,000	f
Vinylidene Chloride (Ethene, 1,1-Dichloro-)	75-35-4	10,000	g
Vinylidene Fluoride (Ethene, 1,1-Difluoro-)	75-38-7	10,000	f
Warfarin	81-81-2	500/10,000 ¹	
Warfarin Sodium (Coumadin) (Sodium salt)	129-06-6	100/10,000 ¹	
Xylylene Dichloride	28347-13-9	100/10,000 ¹	
Zinc, Dichloro(4,4-Dimethyl-5(((Methylamino) Carbonyl)Oxy)Imino)Pentanenitrile)-, (T-4)-	58270-08-9	100/10,000 ¹	
Zinc Phosphide	1314-84-7	500	

* Substances delisted failing physical criteria test and relisted pursuant to health impacts.

¹ These extremely hazardous substances are solids. The lesser quantity listed applies only if in powdered form and with a particle size of less than 100 microns; or if handled in solution or in molten form; or the substance has an NFPA rating for reactivity of 2, 3, or 4. Otherwise, a 10,000 pound threshold applies.

² Appropriate synonyms or mixtures of regulated substances with the same CAS number are also regulated, e.g., anhydrous ammonia, formalin.

³ Sulfuric acid is a State Regulated Substance only under the following conditions:

a. If concentrated with greater than 100 pounds of sulfur trioxide or the acid meets the definition of oleum. (The threshold for sulfur trioxide is 100 pounds.) (The threshold for oleum is 10,000 pounds.)

b. If in a container with flammable hydrocarbons (flash point < 73° F).

⁴ Hydroquinone is exempt in crystalline form.

⁵ The mixture exemption in Section 2770.2(b)(1) does not apply to the Substance.

LEGEND: Basis for Listing:

a. Mandated for listing by Congress.

b. On EHS list, vapor pressure 10 mmHg or greater.

c. Toxic gas.

d. Toxicity of hydrogen chloride, potential to release hydrogen chloride, and history of accidents.

e. Toxicity of sulfur trioxide and sulfuric acid, potential to release sulfur trioxide, and history of accidents.

f. Flammable gas.

g. Volatile flammable liquid.

III. UNDERGROUND STORAGE TANK SECTION

To be completed by all persons or businesses that own or operate an underground storage tank

Be advised that appropriate signatures must be provided on forms.

This section includes:

o OPERATING PERMIT APPLICATION – FACILITY INFORMATION

o OPERATING PERMIT APPLICATION – TANK INFORMATION

One tank per page. Make photocopies as necessary.

o CERTIFICATION OF INSTALLATION / MODIFICATION

o MONITORING PLAN--Complete Section II of the Consolidated Contingency Plan

o EMERGENCY RESPONSE PLAN

Be advised that this Emergency Response and Monitoring Plan must be kept at the UST location at all times. The local UST agency, CUPA or PA, must be notified within 30 days of any changes to the monitoring procedures. Consult your local UST agency for additional information on State and any local regulatory requirements concerning this Plan.

APPLICANT NAME (print)

426.

APPLICANT TITLE

427

UST Operating Permit Application – Facility Information Page 1 Instructions (Formerly SWRCB UST Permit Application Form A and UPCF Form hwfwrca)

Complete this form for all new permits, permit changes, or facility information changes. This form must be submitted within 30 days of permit or facility information changes, unless your local agency requires approval prior to making the changes. For changes, submit only that form that contains the change.

Submit one UST Operating Permit Application – Facility Information form per facility, regardless of the number of USTs located at the facility. If not already on file with the local agency, the tank owner must submit with this form, a current UST Operating Permit Application – Tank Information form for each UST; a UST Monitoring Plan and a UST Response Plan pursuant to 23 CCR 2632, 2634 and 2641; and, for USTs containing petroleum, a certification of financial responsibility pursuant to 23 CCR 2807.

The following documents, at a minimum, are also required, if applicable (check with your local agency to see if they require submittal or if there are other forms/information needed):

- Written agreement between UST Owner and UST Operator per Health and Safety Code §25284(a)(3);
- Letter from the Chief Financial Officer (if using State Cleanup Fund, financial test of self-insurance, guarantee, local government financial test, or Local Government Fund as a financial responsibility mechanism).

Please number all pages of your submittal. (Note: Numbering of these instructions matches the data element numbers on the form.)

400. TYPE OF ACTION – Check the reason this form is being submitted. CHECK ONE ITEM ONLY.
404. TOTAL NUMBER OF USTs AT SITE – Indicate the number of tanks that will remain on the site after the requested action.
1. FACILITY ID NUMBER – This space is for agency use only.
3. BUSINESS NAME – Enter the complete Business Name. (Same as FACILITY NAME or DBA (Doing Business As)).
103. BUSINESS SITE ADDRESS – Enter the address of the physical location of the facility..
104. CITY – Enter the city or unincorporated area in which the facility is located.
403. FACILITY TYPE – Indicate the type of facility.
405. INDIAN RESERVATION OR TRUST LANDS – Check whether the facility is located on an Indian reservation or other trust lands.
407. PROPERTY OWNER NAME – Complete items 407 - 412 for the property owner. Include the area code and any extension number.
408. PROPERTY OWNER PHONE –
409. PROPERTY OWNER MAILING ADDRESS –
410. PROPERTY OWNER CITY –
411. PROPERTY OWNER STATE –
412. PROPERTY OWNER ZIP CODE –
- 428-1. TANK OPERATOR NAME – Complete items 428-1 to 428-6 for the UST operator. Include the area code and any extension number.
- 428-2. TANK OPERATOR PHONE –
- 428-3. TANK OPERATOR MAILING ADDRESS –
- 428-4. TANK OPERATOR CITY –
- 428-5. TANK OPERATOR STATE –
- 428-6. TANK OPERATOR ZIP CODE –
414. TANK OWNER NAME – Complete items 414 - 419 for the UST owner. Include the area code and any extension number.
415. TANK OWNER PHONE –
416. TANK OWNER MAILING ADDRESS –
417. TANK OWNER CITY –
418. TANK OWNER STATE –
419. TANK OWNER ZIP CODE –
420. TANK OWNER TYPE – Check the type of tank ownership.
421. BOE NUMBER – Enter your State Board of Equalization (BOE) UST storage fee account number. This fee applies to regulated USTs storing petroleum products and is required before your permit application will be processed. If you do not have an account number with the BOE, or if you have any questions regarding the fee or exemptions, contact the BOE at (916) 322-9669 or by mail at: Board of Equalization, Fuel Taxes Division, PO Box 942879, Sacramento, CA 94279-0030.
423. PERMIT HOLDER INFORMATION – Indicate the party to whom the UST operating permit is to be issued and legal notifications and mailings should be sent.
406. SUPERVISOR OF DIVISION SECTION OR OFFICE SUPERVISOR – If the facility owner is a public agency, enter the name of the supervisor of the division section or office that operates the UST. This person must have access to the UST records.
- APPLICANT SIGNATURE – The application form must be signed, in the space provided, by:
- The UST owner or operator, facility owner or operator, or a duly authorized representative of the owner; or
 - If the UST(s) is/are owned by a corporation, partnership, or public agency:
 - 1.) A principal executive officer at the level of vice-president or by an authorized representative responsible for the overall operation of the facility where the UST(s) is/are located; or
 - 2.) A general partner or proprietor; or
 - 3.) A principal executive officer, ranking elected official, or authorized representative of a public agency.
424. DATE – Enter the date the form was signed.
425. PHONE – Enter the phone number of the applicant (i.e., person signing the form). Include the area code and any extension number.
426. APPLICANT NAME – Print or type the full name of the person signing the form.
427. APPLICANT TITLE – Enter the title of the person signing the form.

UNIFIED PROGRAM CONSOLIDATED FORM UNDERGROUND STORAGE TANK

OPERATING PERMIT APPLICATION – TANK INFORMATION (One form per UST)

TYPE OF ACTION (Check one item. For an UST permanent closure or removal, complete only this section and Sections I, II, III, IV, and IX below) 430
 1. NEW PERMIT 3. RENEWAL PERMIT 5. CHANGE OF INFORMATION
 6. TEMPORARY UST CLOSURE 7. UST PERMANENT CLOSURE ON SITE 8. UST REMOVAL

DATE UST PERMANENTLY CLOSED: 430a | DATE EXISTING UST DISCOVERED: 430b

I. FACILITY INFORMATION

FACILITY ID # (Agency Use Only) 1

BUSINESS NAME (Same as FACILITY NAME or DBA-Doing Business As) 3

BUSINESS SITE ADDRESS 103 | CITY 104

II. TANK DESCRIPTION

TANK ID # 432 | TANK MANUFACTURER 433 | TANK CONFIGURATION: THIS TANK IS 434

1. A STAND-ALONE TANK
 2. ONE IN A COMPARTMENTED UNIT .
Complete one page for each compartment in the unit.

DATE UST SYSTEM INSTALLED 435 | TANK CAPACITY IN GALLONS 436 | NUMBER OF COMPARTMENTS IN THE UNIT 437

III. TANK USE AND CONTENTS

TANK USE 1a. MOTOR VEHICLE FUEL 1b. MARINA FUELING 1c. AVIATION FUELING 439
 3. CHEMICAL PRODUCT STORAGE 4. HAZARDOUS WASTE (Includes Used Oil) 5. EMERGENCY GENERATOR FUEL [HSC §25281.5(c)]
 6. OTHER GENERATOR FUEL 95. UNKNOWN 99. OTHER (Specify): 439a

CONTENTS PETROLEUM: 1a. REGULAR UNLEADED 1c. MIDGRADE UNLEADED 1b. PREMIUM UNLEADED 440
 3. DIESEL 5. JET FUEL 6. AVIATION GAS
 8. PETROLEUM BLEND FUEL 9. OTHER PETROLEUM (Specify): 440a

NON-PETROLEUM: 7. USED OIL 10. ETHANOL 440b
 11. OTHER NON-PETROLEUM (Specify):

IV. TANK CONSTRUCTION

TYPE OF TANK 1. SINGLE WALL 2. DOUBLE WALL 95. UNKNOWN 443

PRIMARY CONTAINMENT 1. STEEL 3. FIBERGLASS 6. INTERNAL BLADDER 444
 7. STEEL + INTERNAL LINING 95. UNKNOWN 99. OTHER (Specify):

SECONDARY CONTAINMENT 1. STEEL 3. FIBERGLASS 6. EXTERIOR MEMBRANE LINER 7. JACKETED 445
 90. NONE 95. UNKNOWN 99. OTHER (Specify):

OVERFILL PREVENTION 1. AUDIBLE & VISUAL ALARMS 2. BALL FLOAT 3. FILL TUBE SHUT-OFF VALVE 452.
 4. TANK MEETS REQUIREMENTS FOR EXEMPTION FROM OVERFILL PREVENTION EQUIPMENT

V. PRODUCT / WASTE PIPING CONSTRUCTION

PIPING CONSTRUCTION 1. SINGLE-WALLED 2. DOUBLE-WALLED 99. OTHER 460

SYSTEM TYPE 1. PRESSURE 2. GRAVITY 3. CONVENTIONAL SUCTION 4. SAFE SUCTION [23 CCR §2636(a)(3)] 458

PRIMARY CONTAINMENT 1. STEEL 4. FIBERGLASS 8. FLEXIBLE 10. RIGID PLASTIC 464
 90. NONE 95. UNKNOWN 99. OTHER(Specify):

SECONDARY CONTAINMENT 1. STEEL 4. FIBERGLASS 8. FLEXIBLE 10. RIGID PLASTIC 464b
 90. NONE 95. UNKNOWN 99. OTHER (Specify):

PIPING/TURBINE CONTAINMENT SUMP TYPE 1. SINGLE WALL 2. DOUBLE WALL 90. NONE 464d

VI. VENT, VAPOR RECOVERY (VR) AND RISER / FILL PIPE PIPING CONSTRUCTION

VENT PRIMARY CONTAINMENT 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 90. NONE 99. OTHER (Specify) 464e
464e1

VENT SECONDARY CONTAINMENT 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 90. NONE 99. OTHER (Specify) 464f
 VR SECONDARY CONTAINMENT 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 90. NONE 99. OTHER (Specify) 464h
464h1

VENT PIPING TRANSITION SUMP TYPE 1. SINGLE WALL 2. DOUBLE WALL 90. NONE 464i.

RISER PRIMARY CONTAINMENT 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 90. NONE 99. OTHER (Specify) 464j

RISER SECONDARY CONTAINMENT 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 90. NONE 99. OTHER (Specify) 464k
464k1

FILL COMPONENTS INSTALLED 1. SPILL BUCKET 3. STRIKER PLATE/BOTTOM PROTECTOR 4. CONTAINMENT SUMP 451a-c

VII. UNDER DISPENSER CONTAINMENT (UDC)

CONSTRUCTION TYPE 1. SINGLE WALL 2. DOUBLE WALL 3. NO DISPENSERS 90. NONE 469a

CONSTRUCTION MATERIAL 1. STEEL 4. FIBERGLASS 10. RIGID PLASTIC 99. OTHER (Specify) 469b-c

VIII. CORROSION PROTECTION

STEEL COMPONENT PROTECTION 2. SACRIFICIAL ANODE(S) 4. IMPRESSED CURRENT 6. ISOLATION 448.

IX. APPLICANT SIGNATURE

CERTIFICATION: I certify that this UST system is compatible with the hazardous substance stored and that the information provided herein is true, accurate, and in full compliance with legal requirements.

APPLICANT SIGNATURE DATE 470.

APPLICANT NAME (print) 471. | APPLICANT TITLE 472.

UST Operating Permit Application – Tank Information Instructions
(Formerly SWRCB Permit Application Form B and UPCF Form hwfwr-c-b)

Complete a separate form of each UST or compartment for new permits, permit changes, and changes in system information. Submit this form within 30 days of any changes to the permit or system information, unless exempted from your local agency. For a UST permanent closure or removal, complete only TYPE OF ACTION and Sections I, II, III, IV, and IX. (Note: Numbering of these instructions matches the data element numbers on the form.)

- 430. TYPE OF ACTION – Check the appropriate box to indicate why this form is being submitted.
- 430a. DATE UST PERMANENTLY CLOSED – For reporting closure only: enter the date the UST was removed or closed on site.
- 430b. DATE EXISTING UST DISCOVERED – Enter the date this UST was discovered. Leave blank if installation date is known.
- 1. FACILITY ID NUMBER – This space is for agency use only.
- 3. BUSINESS NAME – Enter the complete facility name.
- 103. BUSINESS SITE ADDRESS – Enter the street address for the physical location of the facility. Post office box numbers are not acceptable.
- 104. CITY – Enter the city or unincorporated area in which the facility is located.
- 432. TANK ID # – The state tank identification number is the unique identifier for the tank.
- 433. TANK MANUFACTURER – Enter the name of the company that manufactured the tank.
- 434. TANK CONFIGURATION. Check the appropriate box for a stand-alone tank or one in a compartmented unit.
- 435. DATE UST SYSTEM INSTALLED – Enter the date of initial tank system installation and approval by the local agency, otherwise leave blank.
- 436. TANK CAPACITY IN GALLONS: For compartmentalized tanks, enter data for the compartment covered by this tank form only.
- 437. NUMBER OF COMPARTMENTS IN THE UNIT: Enter the total number of compartments in the unit.
- 439. TANK USE – Check the type of tank usage.
- 439a. If you checked "Other" specify the type of tank usage in the space provided.
- 440. TANK CONTENTS – Check the specific petroleum or non-petroleum substance stored.
- 440a. If you checked "Other Petroleum" specify the common name written on Form 2371—Hazardous Materials Inventory Chemical Description.
- 440b. If you checked "Other" Non-petroleum, specify the common name written on Form 2371—Hazardous Materials Inventory Chemical Description.
- 443. TYPE OF TANK – Check the box that identifies the type of tank.
- 444. TANK PRIMARY CONTAINMENT – Check the construction material of the primary containment (i.e., inner tank wall nearest the hazardous substance stored). If the tank material is not listed, check "Other" and specify the material in the space provided.
- 444a. If you checked "Other" specify the type of primary containment in the space provided.
- 445. TANK SECONDARY CONTAINMENT – Check the construction material of the secondary containment that provides containment external to, and separate from, the primary containment described above. If the tank is a single-wall tank, check "None." If the material is not listed, check "Other" and specify the material in the space provided (e.g., HDPE).
- 445a. If you checked "Other" specify the type of secondary containment in the space provided.
- 452. OVERFILL PREVENTION – Check the box(es) to describe the type(s) of overflow protection equipment installed.
- 458. PIPING SYSTEM TYPE – Check the type of product/waste piping installed in this tank system. "Safe suction" refers to piping systems meeting all requirements of 23 CCR §2636(a)(3) (also known as "European Suction" systems) (i.e., sloped suction piping systems with no valves or pumps below grade and only one check valve, located below and as close as practical to the suction pump). Visit CCR at www.calregs.com.
- 460. PIPING CONSTRUCTION-Indicate if the piping is single-walled or double-walled, or "other".
- 464. PIPING PRIMARY CONTAINMENT – Check the material(s) used to construct the primary (i.e., inner) underground product/waste piping.
- 464a. If you checked "Other" specify the type of primary containment in the space provided.
- 464b. PIPING SECONDARY CONTAINMENT – Check the material(s) used to construct the secondary containment system(s) (i.e., secondary piping, trench) provided for the product/waste piping. For single-wall piping systems, check "None."
- 464c. If you checked "Other" specify the type of secondary containment in the space provided.
- 464d. PIPING/TURBINE CONTAINMENT SUMP TYPE – Indicate the type of piping/turbine containment sump(s). Check "None" if not present.
- 464e-e1 VENT PRIMARY CONTAINMENT – Check the material(s) used to construct the primary (i.e., inner) vent piping. (Note: Address venting of the tank primary containment only.) Specify Other type of containment in the space provided.
- 464f-f1 VENT SECONDARY CONTAINMENT – Check the material(s) used to construct the secondary containment system(s) (e.g., secondary piping,) provided for the vent piping. For single-wall piping systems, check "None." (Note: Address venting of the tank primary containment only.) Specify Other type of containment in the space provided.
- 464g-g1 VR PRIMARY CONTAINMENT – Check the material(s) used to construct the primary (i.e., inner) vapor recovery piping. For tanks without vapor recovery piping (e.g., Diesel tanks), check "None." Specify Other type of containment in the space provided.
- 464h-h1 VR SECONDARY CONTAINMENT – Check the material(s) used to construct the secondary containment system(s) (e.g., secondary piping) provided for the vapor recovery piping. For single-wall piping systems, check "None." Specify Other type of containment in the space provided.
- 464i. VENT PIPING TRANSITION SUMP TYPE – Indicate type of transition sump(s). Check "None" if not present.
- 464j-j1 RISER PRIMARY CONTAINMENT – Check the material(s) used to construct the primary (i.e., inner) piping for all risers (not drop tubes) other than annular space risers (i.e., risers for filling or gauging of the primary tank). Specify Other type of containment in the space provided.
- 464k-k1 RISER SECONDARY CONTAINMENT – Check the material(s) used to construct secondary containment system(s) (i.e., secondary piping, sumps) provided for the riser piping. For risers without secondary containment, check "None." Specify Other type of containment in the space provided.
- 451a-c. FILL COMPONENTS INSTALLED – Check the appropriate boxes to show that spill containment, tank bottom protection, and fill containment sumps (if applicable) are installed.
- 469a. UDC CONSTRUCTION TYPE – Check the box to describe the type of dispenser containment system(s) (i.e., dispenser sumps or pans). If the system has no dispensers (e.g., standby generator tank system), check "No Dispensers." If the system has a dispenser, but no UDC, check "None".
- 469b. UDC CONSTRUCTION MATERIAL – Check the box to describe the materials used to construct the UDC.
- 469c. If you checked "Other" specify the construction material in the space provided.
- 448. STEEL COMPONENT PROTECTION – All systems contain some steel components. Check the appropriate box(es) to describe all corrosion protection methods used. "Isolation" means electrical isolation from soil, backfill, and groundwater. Examples include fiberglass cladding, non-metallic secondary containment systems which isolate steel components from the sub-surface environment, and insulating bushings.
- APPLICANT SIGNATURE – The same person who signs the UST Operating Permit Application – Facility Information Form shall sign in the space provided. This signature certifies that the signer believes that all information submitted is true and accurate, and that the UST system is compatible with the hazardous substance stored.
- 470. DATE – Enter the date the form was signed.
- 471. APPLICANT NAME – Print or type the name of the person signing the form.
- 472. APPLICANT TITLE – Enter the title of the person signing the form.

UST Certification of Installation / Modification Form Instructions

This Certification form must be submitted upon the completion of installation or upgrading of tanks and/or piping associated with a UST system. Installation or upgrading of multiple tank systems may be addressed on one form. The UST owner or an authorized representative of the owner must complete this form. (Note: Numbering of these instructions follows the UPCF data element numbers on the Certification form.)

1. FACILITY ID NUMBER – This space is for agency use only.
3. BUSINESS NAME – Enter the complete Facility Name.
103. BUSINESS SITE ADDRESS – Enter the street address of the facility, including building number, if applicable. This address must be the physical location of the facility. Post office box numbers are not acceptable.
104. CITY – Enter the city or unincorporated area in which the facility is located.
- 482a. NAME OF CONTRACTOR WHO PERFORMED INSTALLATION / MODIFICATION – Enter the name of the contractor who performed the work as registered with the Contractors State License Board (CSLB).
- 482b. CONTRACTOR LICENSE # – For the contractor named above, enter the license number assigned by the Contractors State License Board (license information is available online at www.cslb.ca.gov).
- 482c. ICC CERTIFICATION # – Enter the International Code Council (ICC) “UST Installation/Retrofitting” certification number possessed by the contractor.
- 483a. TYPE OF PROJECT – Check the appropriate box(es) to indicate the type of work performed. Address each system component individually (i.e., for installation of a complete motor vehicle fueling UST system, check boxes 1 through 4).
- 483b. WORK AUTHORIZED UNDER PERMIT (Number or Date) – Enter the number of the permit issued by the local agency, or if no permit number, the date the permit or project approval was issued for the work being certified.
- 483c. DESCRIPTION OF WORK BEING CERTIFIED – In the space provided, briefly describe the work performed. Include the number and type of UST systems installed or upgraded and the scope of work (e.g., “Installation of piping sumps and under dispenser containment, and replacement of product and vapor recovery piping associated with one 12,000 gallon regular unleaded and one 8,000 gallon premium unleaded motor vehicle fuel tank.”).

SIGNATURE OF TANK OWNER OR OWNER’S AGENT – The tank owner or an authorized agent of the owner shall sign in the space provided. This signature certifies that the signer believes that all the information submitted is true and accurate.

484. DATE CERTIFIED – Enter the date the form was signed.
485. CERTIFIER’S NAME – Enter the full printed name of the person signing the form.
486. CERTIFIER’S TITLE – Enter the title of the person signing the form.
487. PHONE – Enter the phone number of the person signing the certification. Include the area code and any extension number.
488. NAME OF CERTIFIER’S EMPLOYER – Enter the name (DBA) of the employer of the person signing the form. If the tank owner is an individual, and the owner signs the Certification, note “N/A” (Not Applicable) in this space.
489. CERTIFIER’S RELATIONSHIP TO TANK OWNER – Check the appropriate box to indicate the nature of the relationship between the person signing the form and the tank owner.

Appendix VI

(Copies of Monitoring System Certification form and UST Monitoring Plot Plan available at <http://www.swrcb.ca.gov>.)

MONITORING SYSTEM CERTIFICATION

For Use By All Jurisdictions Within the State of California

Authority Cited: Chapter 6.7, Health and Safety Code; Chapter 16, Division 3, Title 23, California Code of Regulations

This form must be used to document testing and servicing of monitoring equipment. A separate certification or report must be prepared for each monitoring system control panel by the technician who performs the work. A copy of this form must be provided to the tank system owner/operator. The owner/operator must submit a copy of this form to the local agency regulating UST systems within 30 days of test date.

A. General Information

Facility Name: _____ Bldg. No.: _____

Site Address: _____ City: _____ Zip: _____

Facility Contact Person: _____ Contact Phone No.: (____) _____

Make/Model of Monitoring System: _____ Date of Testing/Servicing: ____/____/____

B. Inventory of Equipment Tested/Certified

Check the appropriate boxes to indicate specific equipment inspected/serviced:

Tank ID: _____ <input type="checkbox"/> In-Tank Gauging Probe. Model: _____ <input type="checkbox"/> Annular Space or Vault Sensor. Model: _____ <input type="checkbox"/> Piping Sump / Trench Sensor(s). Model: _____ <input type="checkbox"/> Fill Sump Sensor(s). Model: _____ <input type="checkbox"/> Mechanical Line Leak Detector. Model: _____ <input type="checkbox"/> Electronic Line Leak Detector. Model: _____ <input type="checkbox"/> Tank Overfill / High-Level Sensor. Model: _____ <input type="checkbox"/> Other (specify equipment type and model in Section E on Page 2).	Tank ID: _____ <input type="checkbox"/> In-Tank Gauging Probe. Model: _____ <input type="checkbox"/> Annular Space or Vault Sensor. Model: _____ <input type="checkbox"/> Piping Sump / Trench Sensor(s). Model: _____ <input type="checkbox"/> Fill Sump Sensor(s). Model: _____ <input type="checkbox"/> Mechanical Line Leak Detector. Model: _____ <input type="checkbox"/> Electronic Line Leak Detector. Model: _____ <input type="checkbox"/> Tank Overfill / High-Level Sensor. Model: _____ <input type="checkbox"/> Other (specify equipment type and model in Section E on Page 2).
Tank ID: _____ <input type="checkbox"/> In-Tank Gauging Probe. Model: _____ <input type="checkbox"/> Annular Space or Vault Sensor. Model: _____ <input type="checkbox"/> Piping Sump / Trench Sensor(s). Model: _____ <input type="checkbox"/> Fill Sump Sensor(s). Model: _____ <input type="checkbox"/> Mechanical Line Leak Detector. Model: _____ <input type="checkbox"/> Electronic Line Leak Detector. Model: _____ <input type="checkbox"/> Tank Overfill / High-Level Sensor. Model: _____ <input type="checkbox"/> Other (specify equipment type and model in Section E on Page 2).	Tank ID: _____ <input type="checkbox"/> In-Tank Gauging Probe. Model: _____ <input type="checkbox"/> Annular Space or Vault Sensor. Model: _____ <input type="checkbox"/> Piping Sump / Trench Sensor(s). Model: _____ <input type="checkbox"/> Fill Sump Sensor(s). Model: _____ <input type="checkbox"/> Mechanical Line Leak Detector. Model: _____ <input type="checkbox"/> Electronic Line Leak Detector. Model: _____ <input type="checkbox"/> Tank Overfill / High-Level Sensor. Model: _____ <input type="checkbox"/> Other (specify equipment type and model in Section E on Page 2).
Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).	Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).
Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).	Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).
Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).	Dispenser ID: _____ <input type="checkbox"/> Dispenser Containment Sensor(s). Model: _____ <input type="checkbox"/> Shear Valve(s). <input type="checkbox"/> Dispenser Containment Float(s) and Chain(s).

*If the facility contains more tanks or dispensers, copy this form. Include information for every tank and dispenser at the facility.

C. Certification - I certify that the equipment identified in this document was inspected/serviced in accordance with the manufacturers' guidelines. Attached to this Certification is information (e.g. manufacturers' checklists) necessary to verify that this information is correct and a Plot Plan showing the layout of monitoring equipment. For any equipment capable of generating such reports, I have also attached a copy of the report; (check all that apply): System set-up Alarm history report

Technician Name (print): _____ Signature: _____

Certification No.: _____ **License. No.:** _____

Testing Company Name: _____ Phone No.:(____) _____

Testing Company Address: _____ Date of Testing/Servicing: ____/____/____

F. In-Tank Gauging / SIR Equipment:

- Check this box if tank gauging is used only for inventory control.
- Check this box if no tank gauging or SIR equipment is installed.

This section must be completed if in-tank gauging equipment is used to perform leak detection monitoring.

Complete the following checklist:

<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Has all input wiring been inspected for proper entry and termination, including testing for ground faults?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Were all tank gauging probes visually inspected for damage and residue buildup?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Was accuracy of system product level readings tested?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Was accuracy of system water level readings tested?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Were all probes reinstalled properly?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Were all items on the equipment manufacturer's maintenance checklist completed?

* In the Section H, below, describe how and when these deficiencies were or will be corrected.

G. Line Leak Detectors (LLD):

- Check this box if LLDs are not installed.

Complete the following checklist:

<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For equipment start-up or annual equipment certification, was a leak simulated to verify LLD performance? <i>(Check all that apply)</i> Simulated leak rate: <input type="checkbox"/> 3 g.p.h.; <input type="checkbox"/> 0.1 g.p.h ; <input type="checkbox"/> 0.2 g.p.h.
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Were all LLDs confirmed operational and accurate within regulatory requirements?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Was the testing apparatus properly calibrated?
<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For mechanical LLDs, does the LLD restrict product flow if it detects a leak?
<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For electronic LLDs, does the turbine automatically shut off if the LLD detects a leak?
<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For electronic LLDs, does the turbine automatically shut off if any portion of the monitoring system is disabled or disconnected?
<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For electronic LLDs, does the turbine automatically shut off if any portion of the monitoring system malfunctions or fails a test?
<input type="checkbox"/> Yes	<input type="checkbox"/> No* <input type="checkbox"/> N/A	For electronic LLDs, have all accessible wiring connections been visually inspected?
<input type="checkbox"/> Yes	<input type="checkbox"/> No*	Were all items on the equipment manufacturer's maintenance checklist completed?

* In the Section H, below, describe how and when these deficiencies were or will be corrected.

H. Comments: _____

**UNIFIED PROGRAM CONSOLIDATED FORM
UNDERGROUND STORAGE TANK
MONITORING PLAN – (Page 1 of 2)**

TYPE OF ACTION	<input type="checkbox"/> 1. NEW PLAN	<input type="checkbox"/> 2. CHANGE OF INFORMATION	490-1
PLAN TYPE	<input type="checkbox"/> 1. MONITORING IS IDENTICAL FOR ALL USTs AT THIS FACILITY.		490-2
(Check one item only) <input type="checkbox"/> 2. THIS PLAN COVERS ONLY THE FOLLOWING UST SYSTEM(S): _____			
I. FACILITY INFORMATION			
FACILITY ID # (Agency Use Only)	_____	_____	1
BUSINESS NAME (Same as FACILITY NAME)	_____		3.
BUSINESS SITE ADDRESS	103.	CITY	104.
II. EQUIPMENT TESTING AND PREVENTIVE MAINTENANCE			
Testing, preventive maintenance, and calibration of monitoring equipment (e.g., sensors, probes, line leak detectors, etc.) must be performed at the frequency specified by the equipment manufacturers' instructions, or annually, whichever is more frequent, and that such work must be performed by qualified personnel. (23 CCR §2632, 2634, 2638, 2641)			
MONITORING EQUIPMENT IS SERVICED	<input type="checkbox"/> 1. ANNUALLY	<input type="checkbox"/> 99. OTHER (Specify): _____	490-3a 490-3b
III. MONITORING LOCATIONS			
<input type="checkbox"/> 1. NEW SITE PLAN/MAP SUBMITTED WITH THIS PLAN. <input type="checkbox"/> 2. SITE PLAN/MAP PREVIOUSLY SUBMITTED. (23 CCR §2632, 2634) 490-4			
IV. TANK MONITORING IS PERFORMED USING THE FOLLOWING METHOD(S):			
<input type="checkbox"/> 1. CONTINUOUS ELECTRONIC TANK MONITORING OF ANNULAR (INTERSTITIAL) SPACE(S) OR SECONDARY CONTAINMENT VAULT(S) WITH AUDIBLE AND VISUAL ALARMS. (23 CCR §2632, 2634)			
SECONDARY CONTAINMENT IS: <input type="checkbox"/> a. DRY <input type="checkbox"/> b. LIQUID FILLED <input type="checkbox"/> c. PRESSURIZED <input type="checkbox"/> d. UNDER VACUUM 490-6			
PANEL MANUFACTURER:	490-7.	MODEL #:	490-8
LEAK SENSOR MANUFACTURER:	490-9.	MODEL #(S):	490-10
<input type="checkbox"/> 2. AUTOMATIC TANK GAUGING (ATG) SYSTEM USED TO MONITOR <u>SINGLE WALL TANK(S)</u> . (23 CCR §2643)			
PANEL MANUFACTURER:	490-12.	MODEL #:	490-13
IN-TANK PROBE MANUFACTURER:	490-14.	MODEL #(S):	490-15
LEAK TEST FREQUENCY: <input type="checkbox"/> a. CONTINUOUS <input type="checkbox"/> b. DAILY/NIGHTLY <input type="checkbox"/> c. WEEKLY 490-16			
<input type="checkbox"/> d. MONTHLY <input type="checkbox"/> e. OTHER (Specify): _____ 490-17			
PROGRAMMED TESTS: <input type="checkbox"/> a. 0.1 g.p.h. <input type="checkbox"/> b. 0.2 g.p.h. <input type="checkbox"/> c. OTHER (Specify): _____ 490-18 490-19			
<input type="checkbox"/> 3. MONTHLY STATISTICAL INVENTORY RECONCILIATION (23 CCR §2646.1): 490-20			
<input type="checkbox"/> 4. WEEKLY MANUAL TANK GAUGING (MTG) (23 CCR §2645). TESTING PERIOD: <input type="checkbox"/> a. 36 HOURS <input type="checkbox"/> b. 60 HOURS 490-21 490-22			
<input type="checkbox"/> 5. TANK INTEGRITY TESTING (23 CCR §2643.1):			
TEST FREQUENCY: <input type="checkbox"/> a. ANNUALLY 490-23 <input type="checkbox"/> b. BIENNIALLY 490-24 <input type="checkbox"/> c. OTHER 490-25 (Specify): _____ 490-26 490-27			
<input type="checkbox"/> 99. OTHER (Specify): _____ 490-26 490-27			
V. PIPE MONITORING IS PERFORMED USING THE FOLLOWING METHOD(S) (Check all that apply)			
<input type="checkbox"/> 1. CONTINUOUS MONITORING OF PIPE/ PIPING SUMP(S) AND OTHER SECONDARY CONTAINMENT WITH AUDIBLE AND VISUAL ALARMS. (23 CCR §2636)			
SECONDARY CONTAINMENT IS: <input type="checkbox"/> a. DRY <input type="checkbox"/> b. LIQUID FILLED <input type="checkbox"/> c. PRESSURIZED <input type="checkbox"/> d. UNDER VACUUM 490-29			
PANEL MANUFACTURER:	490-30.	MODEL #:	490-31
LEAK SENSOR MANUFACTURER:	490-32.	MODEL #(S):	490-33
PIPING LEAK ALARM TRIGGERS AUTOMATIC PUMP (i.e., TURBINE) SHUTDOWN. <input type="checkbox"/> a. YES <input type="checkbox"/> b. NO 490-34			
FAILURE/DISCONNECTION OF THE MONITORING SYSTEM TRIGGERS AUTOMATIC PUMP SHUTDOWN. <input type="checkbox"/> a. YES <input type="checkbox"/> b. NO 490-35			
<input type="checkbox"/> 2. MECHANICAL LINE LEAK DETECTOR (MLLD) THAT ROUTINELY PERFORMS 3.0 g.p.h. LEAK TESTS AND RESTRICTS OR SHUTS OFF PRODUCT FLOW WHEN A LEAK IS DETECTED (23 CCR §2636)			
MLLD MANUFACTURER(S): 490-37 MODEL #(S): 490-38			
<input type="checkbox"/> 3. ELECTRONIC LINE LEAK DETECTOR (ELLD) THAT ROUTINELY PERFORMS 3.0 g.p.h. LEAK TESTS (23 CCR §2636)			
ELLD MANUFACTURER(S) 490-40. MODEL #(S): 490-41			
PROGRAMMED IN LINE LEAK TEST: <input type="checkbox"/> 1. MINIMUM MONTHLY 0.2 g.p.h. <input type="checkbox"/> 2. MINIMUM ANNUAL 0.1 g.p.h. 490-42			
ELLD DETECTION OF A PIPING LEAK TRIGGERS AUTOMATIC PUMP SHUTDOWN. <input type="checkbox"/> a. YES <input type="checkbox"/> b. NO 490-43			
ELLD FAILURE/DISCONNECTION TRIGGERS AUTOMATIC PUMP SHUTDOWN. <input type="checkbox"/> a. YES <input type="checkbox"/> b. NO 490-44			
<input type="checkbox"/> 4. PIPE INTEGRITY TESTING 490-45			
TEST FREQUENCY <input type="checkbox"/> a. ANNUALLY <input type="checkbox"/> b. EVERY 3 YEARS <input type="checkbox"/> c. OTHER (Specify) 490-46 490-47			
<input type="checkbox"/> 5. VISUAL PIPE MONITORING. 490-48			
FREQUENCY <input type="checkbox"/> a. DAILY <input type="checkbox"/> b. WEEKLY <input type="checkbox"/> c. MIN. MONTHLY & EACH TIME SYSTEM OPERATED* 490-49			
* Allowed for monitoring of unburied emergency generator fuel piping only per HSC §25281.5(b)(3)			
<input type="checkbox"/> 6. SUCTION PIPING MEETS EXEMPTION CRITERIA [23 CCR §2636(a)(3)]. 490-50			
<input type="checkbox"/> 7. NO REGULATED PIPING PER HEALTH AND SAFETY CODE, DIVISION 20, CHAPTER 6.7 IS CONNECTED TO THE TANK SYSTEM 490-51			
<input type="checkbox"/> 99. OTHER (Specify) 490-52 490-53			

Complete a separate UST Monitoring Plan for each UST monitoring system at the facility. This form must be submitted with your initial UST Operating Permit Application and within 30 days of changes in the information it contains. Please note that your local agency may require you to obtain approval prior to installing or modifying monitoring equipment. (Note: Numbering of these instructions follows the data element numbers on the form.)

- 490-1. TYPE OF ACTION – Check the appropriate box to indicate why this plan is being submitted.
- 490-2. PLAN TYPE – Check the appropriate box to indicate whether this plan covers all, or merely some, of the USTs at the facility. If the plan covers only some of the tanks, identify those tanks in the space provided [e.g., by using the Tank ID #(s) in item 432 of the UST Operating Permit Application – Tank Information Form(s)].
1. FACILITY ID NUMBER – This space is for agency use only.
 3. BUSINESS NAME – Enter the complete Facility Name.
103. BUSINESS SITE ADDRESS – Enter the street address where the facility is located, including building number, if applicable. Post office box numbers are not acceptable. This information must provide a means to locate the facility geographically.
104. CITY – Enter the city or unincorporated area in which the facility is located.
- 490-3a MONITORING EQUIPMENT IS SERVICED – Check the appropriate box to specify the frequency of monitoring equipment testing/certification.
- 490-3b Specify Other frequency for monitoring equipment servicing.
- 490-4 SITE PLAN - Indicate if a site plan/map is submitted with this monitoring plan or if it was submitted previously and is current for the facility. Monitoring plans must include a Site Plot Plan/Map showing the tank and piping layouts and the locations where monitoring is performed (i.e., location of sensors, probes, line leak detectors, monitoring system control panel, etc.).
- 490-5 IV-1 CONTINUOUS ELECTRONIC MONITORING-Indicate if this monitoring method is being used to monitor the tanks.
- 490-6 SECONDARY CONTAINMENT- If IV-1 is checked, check the appropriate box to describe the environment inside the tank secondary containment.
- 490-7 PANEL MANUFACTURER – If IV-1 is checked, enter the name of the manufacturer of the monitoring system control panel (console).
- 490-8 MODEL # – If IV-1 is checked, enter the model number for the monitoring system control panel.
- 490-9 LEAK SENSOR MANUFACTURER – If IV-1 is checked, enter the name of the manufacturer of the sensor(s). If additional space is needed, use Section X.
- 490-10 MODEL #(S) – If IV-1 is checked, enter the model number for each type of sensor installed. If additional space is needed, use Section X.
- 490-11 IV-2 AUTOMATIC TANK GAUGING-Indicate if this method is used for monitoring the UST's.
- 490-12 PANEL MANUFACTURER – If IV-2 is checked, enter the name of the manufacturer of the monitoring system control panel (console).
- 490-13 MODEL # – If IV-2 is checked, enter the model number for the monitoring system control panel.
- 490-14 IN-TANK PROBE MANUFACTURER – If IV-2 is checked, enter the name of the manufacturer of the probe(s).
- 490-15 MODEL #(S) – If IV-2 is checked, enter the model number for each type of in-tank probe installed. If additional space is needed, use Section X.
- 490-16 LEAK TEST FREQUENCY – If IV-2 is checked, check the appropriate box to describe the in-tank leak test frequency.
- 490-17. SPECIFY – If 490-16e is checked, enter the frequency of programmed leak tests.
- 490-18. PROGRAMMED TESTS – If IV-2 is checked, check the appropriate box to describe the tests programmed into the ATG system.
- 490-19. SPECIFY – If 490-18c is checked, enter the frequency of in-tank leak testing.
- 490-20. IV-3 INVENTORY RECONCILIATION – Check the box if statistical inventory reconciliation is performed.
- 490-21. IV-4 WEEKLY MANUAL TANK GAUGING. Indicate if this method is used to monitor the tanks.
- 490-22. TESTING PERIOD – If IV-4 is checked, check the appropriate box to describe the MTG testing period.
- 490-23. IV-5 TANK INTEGRITY TESTING: Indicate if this method is used to monitor the tanks.
- 490-24. TEST FREQUENCY – If IV-5 is checked, check the appropriate box to describe the frequency of tank integrity testing.
- 490-25. OTHER: If 490-24c is checked, specify other test frequency.
- 490-26. IV-99 OTHER: Indicate if monitoring of the tanks occurs that is not indicated in any other category.
- 490-27. If IV-99 is checked, enter a brief description of the other tank monitoring method(s) used (e.g., vadose zone monitoring per 23 CCR §2647, groundwater monitoring per 23CCR §2648). Include the monitoring frequency (e.g., Continuous, Weekly). If additional space is needed, use Section X.
- 490-28. V-1 CONTINUOUS MONITORING OF PIPE/PIPING SUMP(S) AND OTHER SECONDARY CONTAINMENT WITH AUDIBLE AND VISUAL ALARMS: Indicate if this is the monitoring method used for the piping.
- 490-29. SECONDARY CONTAINMENT: If V-1 is checked, Check the appropriate box to describe the environment inside piping secondary containment.
- 490-30. PANEL MANUFACTURER – If V-1 is checked, enter the name of the manufacturer of the monitoring system control panel (console).
- 490-31. MODEL # – If V-1 is checked, enter the model number for the monitoring system control panel.
- 490-32. LEAK SENSOR MANUFACTURER – If V-1 is checked, enter the name of the manufacturer of the sensor(s).
- 490-33. MODEL #(S) – If V-1 is checked, enter the model number for each type of sensor installed. If additional space is needed, use Section X.
- 490-34. PIPING LEAK ALARM TRIGGERS AUTOMATIC PUMP SHUTDOWN – If V-1 is checked, check Yes or No.
- 490-35. FAILURE/DISCONNECTION OF THE MONITORING SYSTEM TRIGGERS AUTOMATIC PUMP SHUTDOWN – If V-1 is checked, check Yes or No.
- 490-36. V-2 PIPE MECHANICAL LINE LEAK DETECTORS PERFORM 3 GPH LEAK TESTS: Indicate if this monitoring method is used to monitor the pipelines.
- 490-37. MLLD MANUFACTURER(S) – If V-2 is checked, enter the name(s) of the manufacturer(s) of the mechanical line leak detector(s). If additional space is needed, use Section X.
- 490-38. MODEL #(s) - If V-2 is checked, Enter the model number for each type of mechanical line leak detector installed. If additional space is needed, use Section X.
- 490-39. V-3 PIPE ELECTRONIC LINE LEAK DETECTORS: Indicate if this monitoring method is used to monitor the pipelines.
- 490-40. ELLD MANUFACTURER – If V-3 is checked, Enter the name of the manufacturer of the electronic line leak detector(s).
- 490-41. MODEL #(S)n - If V-3 is checked, enter the model number for each type of electronic line leak detector installed. If additional space is needed, use Section X.
- 490-42. PROGRAMMED LINE INTEGRITY TESTS –If V-3 is checked, check the appropriate box to describe the type of tests programmed into the monitoring system.
- 490-43. ELLD DETECTION OF A PIPING LEAK ALARM TRIGGERS PUMP SHUTDOWN – If V-1 is checked, check Yes or No.
- 490-44. ELLD DETECTION OF A PIPING LEAK FAILURE/DISCONNECTION TRIGGERS PUMP SHUTDOWN. – If V-1 is checked, check Yes or No.
- 490-45. V-4 PIPE INTEGRITY TESTING - Indicate if this monitoring method is used to monitor the pipelines.
- 490-46. TEST FREQUENCY – If V-4 is checked, check the appropriate box to describe the frequency of pipe integrity testing.
- 490-47. SPECIFY – If 490-46-99 is checked, enter the frequency of pipe integrity testing.
- 490-48. V-5 VISUAL PIPE MONITORING - Indicate if this monitoring method is used to monitor the pipelines.
- 490-49. If V-5 is checked, check the appropriate box to describe the frequency of visual monitoring.
- 490-50. SUCTION PIPING MEETS EXEMPTION CRITERIA - Indicate if this monitoring method is used to monitor the pipelines.
- 490-51. NO REGULATED PIPING PER HEALTH AND SAFETY CODE, DIVISION 20, CHAPTER 6.7 IS CONNECTED TO THE TANK SYSTEM - Check this box if no piping in the tank system is regulated under the UST law, or there is no piping.
- 490-52. V-99 OTHER - Indicate if another method is used for pipeline monitoring.
- 490-53. SPECIFY – Enter a brief description of the other line monitoring method(s) used. If additional space is needed, see Section X. Be sure to clearly describe monitoring method(s) and frequency.

This monitoring plan must include a Site Plan showing the general tank and piping layouts and the locations where monitoring is performed (i.e., location of each sensor, line leak detector, monitoring system control panel, etc.). If you already have a diagram (e.g., current UST Monitoring Site Plan from a Monitoring System Certification form, Hazardous Materials Business Plan map, etc.) that shows all required information, include it with this plan.

**UNIFIED PROGRAM CONSOLIDATED FORM
UNDERGROUND STORAGE TANK
MONITORING PLAN (Page 2 of 2)**

VI. UNDER DISPENSER CONTAINMENT (UDC) MONITORING

1. UDC MONITORING IS PERFORMED USING THE FOLLOWING METHOD

1. CONTINUOUS ELECTRONIC MONITORING 2. FLOAT AND CHAIN ASSEMBLY 3. ELECTRONIC STAND-ALONE
 4. NO DISPENSERS 99. OTHER (Specify):

490-54a
490-54b

PANEL MANUFACTURER: 490-55 MODEL #: 490-56.

LEAK SENSOR MANUFACTURER: 490-57 MODEL #(S): 490-58

DETECTION OF A LEAK INTO THE UDC TRIGGERS AUDIBLE AND VISUAL ALARMS a. YES b. NO 490-59

UDC LEAK ALARM TRIGGERS AUTOMATIC PUMP SHUTDOWN a. YES b. NO 490-60.

FAILURE / DISCONNECTION OF UDC MONITORING SYSTEM TRIGGERS AUTOMATIC PUMP SHUTDOWN. a. YES b. NO 490-61

UDC MONITORING STOPS THE FLOW OF PRODUCT AT THE DISPENSER. a. YES b. NO 490-62

2. UDC CONSTRUCTION IS 1. SINGLE-WALLED 2. DOUBLE-WALLED 490-63

IF DOUBLE WALLED:
UDC INTERSTITIAL SPACE IS MONITORED BY: 1. LIQUID 2. PRESSURE 3. VACUUM 490-64a

A LEAK WITHIN THE SECONDARY CONTAINMENT OF THE UDC TRIGGERS AUDIBLE AND VISUAL ALARMS a. YES b. NO 490-64b

VII. PERIODIC SYSTEM TESTING

1. **ELD TESTING:** THIS FACILITY HAS BEEN NOTIFIED BY THE STATE WATER RESOURCES CONTROL BOARD THAT ENHANCED LEAK DETECTION (ELD) MUST BE PERFORMED. PERIODIC ELD IS PERFORMED EVERY 36 MONTHS AS REQUIRED. (23 CCR §2644.1) 490-65.

2. **SECONDARY CONTAINMENT COMPONENTS ARE TESTED EVERY 36 MONTHS.** 490-66

3. **SPILL BUCKETS ARE TESTED ANNUALLY.** 490-67

VIII. RECORDKEEPING

The following monitoring/maintenance records are kept for this facility:

- Alarm logs 490-68a Visual Inspection Records 490-68b Tank integrity testing results 490-68c
 SIR testing results (and supporting documentation records). 490-68d Tank gauging results (and supporting documentation records). 490-68e
 ATG Testing results (and supporting documentation records). 490-68f Corrosion Protection 60-day logs 490-68g
 Equipment maintenance and calibration records. 490-68h

IX. TRAINING

Personnel with UST monitoring responsibilities are familiar with all of the following documents relevant to their job duties. 490-69a

REFERENCE DOCUMENTS MAINTAINED AT FACILITY (Check all that apply)

- THIS UNDERGROUND STORAGE TANK MONITORING PLAN (Required) 490-69b
 OPERATING MANUALS FOR ELECTRONIC MONITORING EQUIPMENT (Required) 490-69c
 CALIFORNIA UNDERGROUND STORAGE TANK REGULATIONS 490-69d
 CALIFORNIA UNDERGROUND STORAGE TANK LAW 490-69e
 STATE WATER RESOURCES CONTROL BOARD (SWRCB) PUBLICATION: "HANDBOOK FOR TANK OWNERS - MANUAL AND STATISTICAL INVENTORY RECONCILIATION" 490-69f
 SWRCB PUBLICATION: "UNDERSTANDING AUTOMATIC TANK GAUGING SYSTEMS" 490-69g
 OTHER (Specify): M69h, M69i

This facility has a "Designated UST Operator" who has passed the California UST System Operator Exam administered by the International Code Council (ICC). The "Designated UST Operator" will train facility employees in the proper operation and maintenance of the UST systems annually, and within 30 days of hire. This training will include, but is not limited to, the following:

- Operation of the UST systems in a manner consistent with the facility's best management practices
- The facility employee's role with regard to the monitoring equipment as specified in this UST Monitoring Plan
- The facility employee's role with regard to spills and overfills as specified in the UST Response Plan
- Names of contact person(s) for emergencies and monitoring alarms. 490-70

X. COMMENTS/ADDITIONAL INFORMATION

Provide additional comments here or indicate how many pages with additional information on specific monitoring procedures are attached to this plan. 490-71

XI. PERSONNEL RESPONSIBILITIES

The UST Owner/Operator is responsible for ensuring that: 1) the daily/routine UST monitoring activities and maintenance of UST leak detection equipment covered by this plan occurs, 2) all conditions that indicate a possible release are investigated, and 3) all monitoring records are maintained properly.

The following person(s) are responsible for performing the monitoring and equipment maintenance:

NAME 490-72 TITLE 490-73

NAME 490-74 TITLE 490-75

The Designated Operator shall visually inspect the facility, provide a report to the owner/operator about any conditions that need follow-up action.

XII. OWNER/OPERATOR SIGNATURE

CERTIFICATION: I certify that the information provided herein is true and accurate to the best of my knowledge.

APPLICANT SIGNATURE 490-76 DATE: 490-77

REPRESENTING: 1. Tank Owner/Operator 2. Facility Owner/Operator 3. Authorized Representative of Owner

APPLICANT NAME (print): 490-78 APPLICANT TITLE: 490-79

(Agency Use Only) This plan is: Approved or Approved with the following conditions

Local Agency Signature: Date:

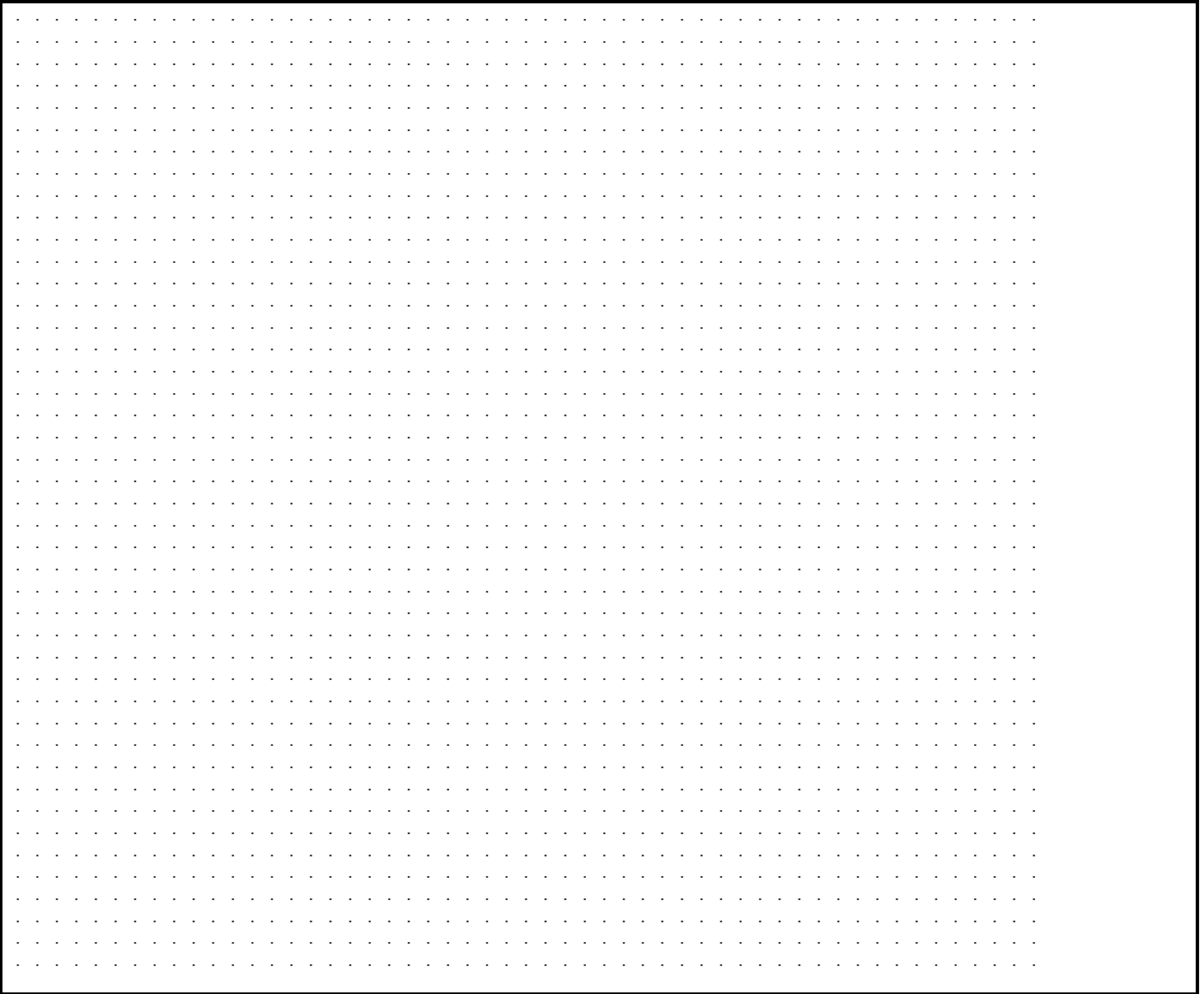
UST Monitoring Plan – Page 2 Instructions

Complete a separate UST Monitoring Plan for each UST monitoring system at the facility. This form must be submitted with your initial UST Operating Permit Application and within 30 days of changes in the information it contains. Please note that your local agency may require you to obtain approval prior to installing or modifying monitoring equipment. (Note: Numbering of these instructions follows the data element numbers on the form.)

- 490-54a. MONITORING OF THE UNDER DISPENSER CONTAINMENT- Indicate the method used for UDC monitoring.
- 490-54b. SPECIFY-If 99 “Other” is checked, describe other method used.
If VI-1-1, VI-1-2 or VI-1-3 or VI-1-99 is checked, complete 490-55 to 490-64b.
- 490-55. PANEL MANUFACTURER –Enter the name of the manufacturer of the monitoring system control panel (console). If there is no control panel (e.g., only an electrical relay box is installed) leave this space blank.
- 490-56. MODEL # - Enter the model number for the monitoring system control panel (console). If there is no control panel (e.g., only an electrical relay box is installed) leave this space blank.
- 490-57. LEAK SENSOR MANUFACTURER – Enter the name of the manufacturer of the sensor(s).
- 490-58. MODEL #(S) – Enter the model number of the sensor(s) installed. If additional space is needed, use Section X.
- 490-59. DETECTION OF A LEAK INTO THE UDC TRIGGERS AUDIBLE AND VISUAL ALARMS. Indicate Yes or No
- 490-60. UDC LEAK ALARM TRIGGERS PUMP SHUTDOWN - Indicate Yes or No
- 490-61. FAILURE/DISCONNECTION OF UDC MONITORING SYSTEM TRIGGERS AUTOMATIC PUMP SHUTDOWN - Indicate Yes or No
- 490-62. UDC MONITORING STOPS THE FLOW OF PRODUCT AT THE DISPENSER - Indicate Yes or No.
- 490-63. UDC CONSTRUCTION - Indicate if the construction of the UDC is single-walled, or double-walled.
- 490-64a. DOUBLE-WALLED INTERSTITIAL SPACE MONITORING - Indicate what is used to monitor the interstitial space.
- 490-64b. LEAK WITHIN THE SECONDARY CONTAINMENT OF UDC TRIGGERS AUDIBLE AND VISUAL ALARMS - Indicate Yes or No
- 490-65. VII-1 ELD TESTING - Check the box if you have been notified by the State Water Resources Control Board (SWRCB) that the UST(s) covered by this plan is/are subject to Enhanced Leak Detection Requirements (i.e., UST has any single-wall component and is located within 1,000 feet of a public drinking water well).
- 490-66. TESTING OF SECONDARY CONTAINMENT COMPONENTS EVERY 36 MONTHS - Check the box if you have secondary containment that requires testing.
- 490-67. SPILL BUCKET TESTING - Check the box if you have spill buckets.
- 490-68a-h. VIII RECORDKEEPING -Indicate which monitoring and equipment maintenance records are maintained for this facility.
- 490-69a IX TRAINING STATEMENT - Check the box to verify that the statement is true.
REFERENCE DOCUMENTS MAINTAINED AT FACILITY – Check the appropriate boxes to describe reference documents maintained at the facility. Note that the first two items on the list must be kept at the facility.
- 490-69b. MONITORING PLAN: Indicate that this plan is kept as a reference document.
- 490-69c. OPERATING MANUALS FOR ELECTRONIC EQUIPMENT: Indicate that this plan is kept as a reference document.
- 490-69d. CA UST REGULATIONS - Indicate that this is kept as a reference document.
- 490-69e. CA UST LAW - Indicate that this is kept as a reference document.
- 490-69f. STATE WATER RESOURCES CONTROL BOARD (SWRCB) PUBLICATION - “HANDBOOK FOR TANK OWNERS - MANUAL AND STATISTICAL INVENTORY RECONCILIATION - Indicate that this is kept as a reference document.
- 490-69g. SWRCB PUBLICATION: “UNDERSTANDING AUTOMATIC TANK GAUGING SYSTEMS”: Indicate that this is kept as a reference document.
- 490-69h. OTHER - Indicate that other reference documents are kept.
- 490-69i. SPECIFY-If “OTHER” is checked, enter a brief description of the other document(s) maintained at the facility. If additional space is needed, see Section X.
- 490-70. DESIGNATED OPERATOR TRAINING - Check this box to verify that this statement is true.
- 490-71. COMMENTS/ADDITIONAL INFORMATION – Make additional comments or you may attach and identify the number of additional pages of information to describe any additional UST system monitoring-related information (e.g., additional information required by your local agency). Attach any monitoring logs that you will be using for the monitoring of your tank system.
- 490-72. NAME – Enter the name of the person who routinely conducts the monitoring and equipment maintenance under this plan.
- 490-73. TITLE - Enter the title of the person.
- 490-74. NAME – Enter the name of the second person, if applicable, who routinely conducts the monitoring and equipment maintenance under this plan.
- 490-75. TITLE - Enter the title of the second person.
OWNER/OPERATOR SIGNATURE – The tank owner/operator, facility owner/operator, or an authorized representative of the owner shall sign in the space provided. This signature certifies that the signer believes that all information submitted is true, accurate, and complete, and that the training program specified in Section IX has been implemented.
- 490-76. REPRESENTING -- Check the appropriate box to indicate whether the signer is the UST owner/operator, the UST facility owner/operator, or an authorized representative of the owner.
- 490-77. DATE – Enter the date the plan was signed.
- 490-78. APPLICANT NAME – Print or type the name of the person signing the plan.
- 490-79. APPLICANT TITLE – Enter the title of the person signing the plan.

UST Monitoring Site Plan

Site Address: _____



Date map was drawn: ____/____/____.

Instructions

Use this page to identify the monitoring system control panels; sensors monitoring tank annular spaces, sumps, dispenser pans, spill containers, or other secondary containment areas, mechanical or electronic line leak detectors, and in-tank liquid level probes (if used for leak detection). On your site plan, show the general layout of tanks and piping. Note the date this Site Plan was prepared.

**UNIFIED PROGRAM CONSOLIDATED FORM
UNDERGROUND STORAGE TANK**

RESPONSE PLAN – PAGE 1 of 2

(One form per facility)

TYPE OF ACTION 1. NEW PLAN 2. CHANGE OF INFORMATION R0
1.

I. FACILITY INFORMATION

FACILITY ID # (*Agency Use Only*)

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BUSINESS NAME (Same as FACILITY NAME) R0
2.

BUSINESS SITE ADDRESS R0
3. CITY R0
4.

II. SPILL CONTROL AND CLEANUP METHODS

This plan addresses unauthorized releases from UST systems and supplements the emergency response plans and procedures in the facility's Hazardous Materials Business Plan.

- If safe to do so, facility personnel will take immediate measures to control or stop any release (e.g., activate pump shut-off, etc.) and, if necessary, safely remove remaining hazardous material from the UST system.
- Any release to secondary containment will be pumped or otherwise removed within a time consistent with the ability of the secondary containment system to contain the hazardous material, but not greater than 30 calendar days, or sooner if required by the local agency. Recovered hazardous materials, unless still suitable for their intended use, will be managed as hazardous waste.
- Absorbent material will be used to contain and clean up manageable spills of hazardous materials. Absorbent material which has become too saturated to be effective or which is no longer intended for use will be managed as hazardous waste unless a waste determination in accordance with 22 CCR §66262.11 finds that it is non-hazardous. Used absorbent material, reusable or waste, will be stored in a properly labeled and sealed container. Waste material shall be disposed appropriately.
- Facility personnel will determine whether any water removed from secondary containment systems, or from clean-up activity, has been in contact with any hazardous material. If the water is contaminated, it will be managed as hazardous waste unless a waste determination in accordance with 22 CCR §66262.11 finds that it is non-hazardous. If the water has a petroleum sheen (i.e., rainbow colors), it is contaminated. A thick floating petroleum layer may not necessarily display rainbow colors. Water (hazardous or non-hazardous) from sumps, spill containers, etc. will not be disposed to storm water systems.
- We will review secondary containment systems for possible deterioration if any of the following conditions occur:
 1. Hazardous material in contact with secondary containment is not compatible with the material used for secondary containment;
 2. Secondary containment is prone to damage from any equipment used to remove or clean up hazardous material collected in secondary containment;
 3. Hazardous material, other than the product/waste stored in the primary containment system, is placed inside secondary containment to treat or neutralize released product/waste, and the added material or resulting material from such a combination is not compatible with secondary containment.

III. SPILL CONTROL AND CLEAN-UP EQUIPMENT

PERIODIC MAINTENANCE: Spill control and clean-up equipment kept permanently on-site is listed in the facility's Hazardous Materials Business Plan. This equipment is inspected at least monthly, and after each use, supplies are replenished as needed. Defective equipment is repaired or replaced as necessary.

EQUIPMENT NOT PERMANENTLY ON-SITE, BUT AVAILABLE FOR USE IF NEEDED: (Complete only if applicable)

EQUIPMENT	LOCATION	AVAILABILITY
R1 0.	R2 0.	R3 0.
R1 1.	R2 1.	R3 1.
R1 2.	R2 2.	R3 2.
R1 3.	R2 3.	R3 3.
R1 4.	R2 4.	R3 4.
R1 5.	R2 5.	R3 5.

IV. RESPONSIBLE PERSONS

THE FOLLOWING PERSON(S) IS/ARE RESPONSIBLE FOR AUTHORIZING ANY WORK NECESSARY UNDER THIS RESPONSE PLAN:

NAME	R40.	TITLE	R50.
NAME	R41.	TITLE	R51.
NAME	R42.	TITLE	R52.
NAME	R43.	TITLE	R53.

V. MONITORING INDICATORS

IF MONITORING INDICATES A POSSIBLE UNAUTHORIZED RELEASE, STEPS TO VERIFY THE RELEASE WILL BE MADE AS FOLLOWS:

Additional system testing or data collection Inspection by qualified persons Recalibration of equipment

Other:

UST Response Plan – Instructions

Complete one UST Response Plan for each UST facility. This form must be submitted with your initial UST Operating Permit Application and within 30 days of changes in the information it contains. It supplements the Emergency Response Plans and Procedures in the facility's Hazardous Materials Business Plan. (Note: Numbering of these instructions follows the data element numbers on the form.)

- R01. TYPE OF ACTION – Check the appropriate box to indicate why this plan is being submitted.
FACILITY ID NUMBER – This space is for agency use only.
- R02. BUSINESS NAME – Enter the complete Facility Name.
- R03. BUSINESS SITE ADDRESS – Enter the street address where the facility is located, including building number, if applicable. Post office box numbers are not acceptable. This information must provide a means to locate the facility geographically.
- R04. CITY – Enter the city or unincorporated area in which the facility is located.
- R10. EQUIPMENT – If you have spill control or clean-up equipment kept off-site, list that equipment in sections R10 through R15. If no equipment is kept off-site, leave this section blank.
- R20. LOCATION – If you have spill control or clean-up equipment kept off-site, list the equipment location(s) sections R20 through R25. If no equipment is kept off-site, leave this section blank.
- R30. AVAILABILITY – If you have spill control or clean-up equipment kept off-site, list the equipment availability in sections R30 through R35. If no equipment is kept off-site, leave this section blank.
- R40. NAME – At least one person responsible for authorizing any work necessary under this UST Response Plan must be identified. Use sections R40 through R43 to list the name(s) of the responsible person(s).
- R50. TITLE – At least one person responsible for authorizing any work necessary under this UST Response Plan must be identified. Use sections R50 through R53 to list the job title(s) of the responsible person(s).
- R60. MONITORING INDICATORS – Briefly describe the steps that will be taken to verify the presence or absence of a release if the tank monitoring system indicates the possibility of a release.
- OWNER/OPERATOR SIGNATURE – The owner/operator shall sign in the space provided. This signature certifies that the signer believes that all information submitted is true, accurate, and complete.
- R70. DATE – Enter the date the plan was signed.
- R71. OWNER/OPERATOR NAME – Print or type the name of the person signing the plan.
- R72. OWNER/OPERATOR TITLE – Enter the title of the person signing the plan.

UNIFIED PROGRAM CONSOLIDATED FORM

**UNDERGROUND STORAGE TANK
RESPONSE PLAN – PAGE 2 of 2**

VI. REPORTING AND RECORD KEEPING

➤ We will report/record any overflow, spill, or unauthorized release from a UST system as indicated in this plan.

Recordable Releases: Any unauthorized release from primary containment which the UST operator is able to clean up within eight (8) hours after the release was detected or should reasonably have been detected, and which does not escape from secondary containment, does not increase the hazard of fire or explosion, and does not cause any deterioration of secondary containment, must be recorded in the facility's monitoring records. Monitoring records must include:

- The UST operator's name and telephone number;
- A list of the types, quantities, and concentrations of hazardous substances released;
- A description of the actions taken to control and clean up the release;
- The method and location of disposal of the released hazardous substances, and whether a hazardous waste manifest was or will be used;
- A description of actions taken to repair the UST and to prevent future releases;
- A description of the method used to reactivate interstitial monitoring after replacement or repair of primary containment.

Reportable Releases: Any overflow, spill, or unauthorized release which escapes from secondary containment (or primary containment if no secondary containment exists), increases the hazard of fire or explosion, or causes any deterioration of secondary containment, is a reportable release. Reportable releases are also recordable.

Within 24 hours after a reportable release has been detected, or should have been detected, we will notify the local agency administering the UST program of the release, investigate the release, and take immediate measures to stop the release. If necessary, or if required by the local agency, remaining stored product/waste will be removed from the UST to prevent further releases or facilitate corrective action. If an emergency exists, we will notify the State Office of Emergency Services.

Within five (5) working days of a reportable release, we will submit to the local agency a full written report containing all of the following information to the extent that the information is known at the time of filing the report:

- The UST owner's or operator's name and telephone number;
- A list of the types, quantities, and concentrations of hazardous materials released;
- The approximate date of the release;
- The date on which the release was discovered;
- The date on which the release was stopped;
- A description of actions taken to control and/or stop the release;
- A description of corrective and remedial actions, including investigations which were undertaken and will be conducted to determine the nature and extent of soil, ground water or surface water contamination due to the release;
- The method(s) of cleanup implemented to date, proposed cleanup actions, and a schedule for implementing the proposed actions;
- The method(s) and location(s) of disposal of released hazardous materials and any contaminated soils, groundwater, or surface water.
- Copies of any hazardous waste manifests used for off-site transport of hazardous wastes associated with clean-up activity;
- **A description of proposed methods for any repair or replacement of UST system primary/secondary containment systems;**
- A description of additional actions taken to prevent future releases.

We will follow the reporting procedures described above if any of the following conditions occur:

- A recordable unauthorized release can not be cleaned up or is still under investigation within eight (8) hours of detection;
- Released hazardous substances are discovered at the UST site or in the surrounding area;
- Unusual operating conditions are observed, including erratic behavior of product dispensing equipment, sudden loss of product, or the unexplained presence of water in the tank, unless system equipment is found to be defective and is immediately repaired or replaced, and no leak has occurred;
- Monitoring results from UST system monitoring equipment/methods indicate that a release may have occurred, unless the monitoring equipment is found to be defective and is immediately repaired, recalibrated, or replaced, and additional monitoring does not confirm the initial results.

Record Retention: Monitoring records and written reports of unauthorized releases must be maintained on-site (or off-site at a readily available location, if approved by the local agency) for at least 3 years. Hazardous waste shipping/disposal records (e.g., manifests) must be maintained for at least 3 years from the date of shipment.

VII. OWNER/OPERATOR SIGNATURE

CERTIFICATION: I certify that the information provided herein is true and accurate to the best of my knowledge.

OWNER/OPERATOR SIGNATURE	DATE	R70.
OWNER/OPERATOR NAME (print)	R71.	OWNER/OPERATOR TITLE R72.

(Agency Use Only) This plan has been reviewed and: Approved Approved With Conditions Disapproved

Local Agency Signature: _____ Date: _____

INTENTIONALLY LEFT BLANK

IV. HAZARDOUS WASTE SECTION

To be completed by all persons or businesses that generate, treat, store, handle or dispose of hazardous waste.

Be advised that appropriate signatures must be provided on forms.

This section includes:

o RECYCLABLE MATERIALS REPORT

This report is submitted every two years to the CUPA or PA by businesses which have recyclable materials excluded from classification as hazardous waste or conduct recycling activities exempted from the State Hazardous Waste Control Law.

o ONSITE HAZARDOUS WASTE TREATMENT NOTIFICATIONS

FACILITY INFORMATION (ONE PER FACILITY)

UNIT INFORMATION (ONE PER UNIT)

CESQT (CONDITIONALLY EXEMPT SMALL QUANTITY TREATER) ATTACHMENT

CESW (CONDITIONALLY EXEMPT SPECIFIED WASTE STREAM) ATTACHMENT

CEL (CONDITIONALLY EXEMPT LIMITED) ATTACHMENT

CA (CONDITIONAL AUTHORIZATION) ATTACHMENT

PBR (PERMIT BY RULE) ATTACHMENT

CERTIFICATION OF FINANCIAL ASSURANCE

Note: These forms may apply to hazardous waste generators who conduct onsite treatments eligible for authorization under California's Tiered Permitted program.

o REMOTE WASTE CONSOLIDATION SITE ANNUAL NOTIFICATION

o HAZARDOUS WASTE TANK CLOSURE CERTIFICATION

o HAZARDOUS WASTE GENERATOR FORM (LA County)

To be completed by businesses which generator wastes classified as hazardous under Federal Law (RCRA or the Resource Conservation Recovery Act) and/or State Law (Chapter 6.5 of the Health and Safety Code). *Note: Non-RCRA hazardous wastes (such as waste oil) are wastes regulated only under State law.*

Recyclable Materials Biennial Report Page 1

Complete this report if you recycle more than 100 kilograms per month of recyclable material under a claim that the material qualifies for an exclusion or exemption pursuant to HSC § 25143.2. Facilities that recycle at the same location at which the material was generated (onsite recyclers) and facilities that recycle materials generated at an offsite location (offsite recyclers) must complete a report. Persons who send materials to another location to be recycled, and who do not recycle material onsite under a claim to an exclusion or exemption provided in HSC § 25143.2, need not complete a report.

Offsite recyclers must complete one report for **each** generator from whom they receive recyclable materials. Complete a **separate** Page 2 of the Report for **each** recyclable material. When this report is submitted, provide a copy of the completed report to the generator of the material recycled. Refer to HSC § 25143.10 for reporting requirements for recyclers.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. **FACILITY ID NUMBER** - Leave this blank. This number is assigned by the CUPA. This is the unique number that identifies your facility.
2. **EPA ID NUMBER** - Enter your facility's 12-character U.S. Environmental Protection Agency (U.S. EPA) or California Identification number. For facilities in California, the number usually starts with the letters "CA". If you do not have a number contact the DTSC Telephone Information Center at (916) 324-1781, (800) - 61-TOXIC or (800) 61-86942, to obtain one.
3. **BUSINESS NAME** - Enter the full legal name of the business.
500. **BEGINNING DATE OF REPORTING PERIOD** - Enter the beginning date of the reporting period for this report. This report is for two calendar years and is due on July 1 of every even-numbered year.
501. **ENDING DATE OF REPORTING PERIOD** - Enter the ending date of the reporting period for this report.
502. **ONSITE RECYCLING** - Check "Yes" if the recycling facility recycles more than 100 kilograms per month of recyclable material generated onsite under a claim that the material qualifies for an exclusion or exemption pursuant to HSC § 25143.2. Check "No" if the recycling facility does not recycle onsite.
503. **OFFSITE RECYCLING** - Check "Yes" if the recycling facility recycles more than 100 kilograms per month of recyclable material under a claim that the material qualifies for an exclusion, or exemption pursuant to HSC § 25143.2, and that material was received from one or more offsite locations. Check "No" if the recycling facility does not recycle material generated offsite.
504. **OFFSITE GENERATOR NAME** - If the generator is different from the recycler, enter the name of the person that generated the recyclable material. Complete a separate report for each generator.
505. **OFFSITE GENERATOR EPA ID NUMBER** - Enter the generator's 12-character U.S. Environmental Protection Agency (EPA) identification number. If the generator needs but does not yet have an identification number, the owner or operator can contact the Telephone Information Center at (916) 324-1781.
506. **OFFSITE GENERATOR STREET ADDRESS** Complete items **506 – 510** for each generator of recyclable material.
507. **OFFSITE GENERATOR PHONE NUMBER**
508. **OFFSITE GENERATOR CITY**
509. **OFFSITE GENERATOR STATE**
510. **OFFSITE GENERATOR ZIP CODE**
511. **OFFSITE GENERATOR MAILING ADDRESS** Complete items **511 – 514** if the mailing address for the offsite generator is different from the street address.
512. **CITY FOR MAILING ADDRESS**
513. **STATE FOR MAILING ADDRESS**
514. **ZIP CODE FOR MAILING ADDRESS**

SIGNATURE OF CERTIFIER - The business owner/operator of the recycling facility shall sign in the space provided. This signature certifies that the signer believes that the information submitted is true, accurate, and complete.

515. **DATE CERTIFIED** - Enter the date that the certification was signed.
516. **NAME OF DOCUMENT PREPARER** - Enter the name of the person who prepared the report.
517. **CERTIFIER NAME** - Enter the full printed name of the certifier.
518. **CERTIFIER TITLE** - Enter the title of the person signing the report.

UNIFIED PROGRAM (UP) FORM RECYCLABLE MATERIALS REPORT – PAGE 1

(COMPLETE ONLY IF CLAIMING A RECYCLING EXCLUSION OR EXEMPTION PER HSC SECTION 25143.2)

FACILITY ID#		1	EPA ID #		Page of		2
--------------	--	---	----------	--	---------	--	---

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)	3
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DATES OF REPORTING PERIOD	BEGINNING DATE	500	ENDING DATE	501
---------------------------	----------------	-----	-------------	-----

I. TYPE OF RECYCLING ACTIVITIES

If yes, please follow instructions.

<p>1. Do you recycle more than 100 kg/month of excluded or exempted recyclable material at the same location at which the material was generated (onsite recycling)?</p> <p style="text-align: right;">502</p> <p style="text-align: center;"><input type="checkbox"/> YES <input type="checkbox"/> NO</p>		<p>4 If YES, you are both the generator and recycler. Complete one Recyclable Materials Report. Do not complete Parts II and V.</p>
<p>2. Do you recycle more than 100 kg/month of non-manifested, excluded recyclable materials received from an offsite location (offsite recycling)?</p> <p style="text-align: right;">503</p> <p style="text-align: center;"><input type="checkbox"/> YES <input type="checkbox"/> NO</p>		<p>4 If YES, you are an offsite recycler but not the generator. Complete a Recyclable Materials Report for each generator that sends you materials.</p>

--Businesses that only send recyclable materials to an offsite recyclers are not required to file this report. --

V. OFFSITE GENERATOR OF RECYCLABLE MATERIAL

Only complete when the generator is different from the recycler.

OFFSITE GENERATOR OF RECYCLABLE MATERIAL	504	OFFSITE GENERATOR EPA ID#	505		
STREET ADDRESS		506	PHONE	507	
CITY	508	STATE	509	ZIP CODE	510
MAILING ADDRESS (IF DIFFERENT)					511
CITY	512	STATE	513	ZIP CODE	514

III. CERTIFICATION SECTION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

SIGNATURE OF CERTIFIER	DATE	515	NAME OF DOCUMENT PREPARER	516	
NAME OF SIGNER (print)	517	TITLE OF SIGNER			518

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY	
CUPA	PA	DISTRICT	INSPECTOR

**INSTRUCTIONS FOR THE UNIFIED PROGRAM (UP) FORM
Recyclable Materials Biennial Report Page 2**

Complete a **separate** Page 2 of the Report for each recyclable material.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

519. TOTAL NUMBER OF RECYCLABLE MATERIALS - Enter the total number of recyclable materials which will be described in this report. Complete a separate Report Page 2 for each recyclable material and verify that the number of pages is the same as the total number listed here.
520. RECYCLABLE MATERIAL NUMBER - Enter the unique identification number of the recyclable material that is described on this page. The recyclable materials can be numbered sequentially, or by any other system as long as the numbers are not repeated or duplicated.
521. COMMON NAME (RECYCLABLE MATERIAL) - Enter the common name of the material recycled. This is the same as item 207, the Common Name on the Hazardous Materials Inventory - Chemical Description page.
522. QUANTITY DURING TWO YEAR REPORTING PERIOD - Enter the total quantity of this recyclable material recycled during the two-year reporting period. Round to nearest decimal. In this case, 1.4 tons = 1 ton reported.
523. UNITS - Enter the unit of measure for the quantity reported in item 522.
524. RECYCLABLE MATERIAL DESCRIPTION - Describe the recyclable material that was used in the recycling process, if not described in item 521, COMMON NAME.
525. RECYCLABLE MATERIAL PROCESS DESCRIPTION - Describe the recycling process and, if the recyclable material was used to provide a product, or was used as a substitute for a product, describe the beneficial use of the recyclable material.
526. AUTHORIZING PROVISION OF HSC SECTION 25143.2 - Enter the subdivision(s), and subparagraph(s) (if applicable) of HSC § 25143.2 that served as the basis for the claim to exemption or exclusion. For example: HSC § 25143.2(d)(2)(C).
527. BASIS FOR CLAIM TO EXCLUSION OR EXEMPTION - Explain the basis for the claim to an exclusion or exemption.
528. HAZARDOUS CONSTITUENT 1-4 - Describe up to four hazardous constituents of the recyclable material (use common name, if appropriate). If more than four constituents of the recyclable material are recycled, attach additional sheets using the same format as on the UPCF. (Report for constituents 2 through 4 in 534, 540, and 546.)
529. CONCENTRATION RECYCLABLE MATERIAL 1-4 - Enter the concentrations of up to four hazardous constituents of the recyclable material as a decimal number. (Report for constituents 2 through 4 in 535, 541, and 547.)
530. UNITS RECYCLABLE MATERIAL 1-4 - Enter the unit of measure of the concentration that is most appropriate, for up to four hazardous constituents of the recyclable material. (Report for constituents 2 through 4 in 536, 542, and 548.)
531. CONCENTRATION FINAL PRODUCT 1-4 - Enter the concentrations in the final product of up to four hazardous constituents of the recyclable material as a decimal number. (Report for constituents 2 through 4 in 537, 543, and 549.)
532. UNITS FINAL PRODUCT 1-4 - Enter the unit of measure of the concentration in the final product, for up to four hazardous constituents of the recyclable material. (Report for constituents 2 through 4 in 538, 544, and 550.)
533. FINAL PRODUCT/USES FOR CONSTITUENT 1-4 - Describe the final product(s) that resulted from the recycling process and how each product was beneficially used. (Report for constituents 2 through 4 in 539, 545, and 551.)
552. DOCUMENTATION - For offsite recyclers, check the box to indicate that documentation of known market is provided. Documentation is required pursuant to HSC § 25143.10(a)(3)(A) to show that there was a known market for disposition of the recyclable material and any products manufactured from it.

UNIFIED PROGRAM (UP) FORM RECYCLABLE MATERIALS REPORT – PAGE 2

(COMPLETE ONLY IF CLAIMING A RECYCLING EXCLUSION OR EXEMPTION PER HSC SECTION 25143.2)

(one description per material recycled, attach additional pages, if needed)

TOTAL NUMBER OF RECYCLABLE MATERIALS 519 Page of

FACILITY ID#	1	BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)	3
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IV. RECYCLABLE MATERIAL INFORMATION A. DESCRIPTION

RECYCLABLE MATERIAL NUMBER 520	COMMON NAME OF RECYCLABLE MATERIAL 521	QUANTITY DURING TWO YEAR REPORTING PERIOD 522	UNITS <input type="checkbox"/> a. Gallons <input type="checkbox"/> c. Tons <input type="checkbox"/> b. Pounds <input type="checkbox"/> d. Kilograms 523
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RECYCLABLE MATERIAL DESCRIPTION 524

RECYCLING PROCESS AND BENEFICIAL USE OF RECYCLABLE MATERIAL 525

AUTHORIZING PROVISION OF HSC SECTION 25143.2 526	BASIS FOR CLAIM TO AN EXCLUSION OR EXEMPTION 527
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B. PRODUCT AND CONSTITUENT INFORMATION: OFFSITE ONLY

Only complete if recyclable material was used to make or substitute for a product and operating pursuant to HSC Section 25143.2(b) or (d)(5) or (6).

HAZARDOUS CONSTITUENT	HAZARDOUS CONSTITUENT		LIST FINAL PRODUCT(S) MADE FROM THIS RECYCLABLE MATERIAL AND BENEFICIAL USE OF FINAL PRODUCT(S)
	In Recyclable Material	In Final Product	
528	529	531	533
	UNITS 530 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	UNITS 532 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	
534	535	537	539
	UNITS 536 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	UNITS 538 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	
540	541	543	545
	UNITS 542 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	UNITS 544 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	
546	547	549	551
	UNITS 548 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	UNITS 550 <input type="checkbox"/> a percent <input type="checkbox"/> b ppm	

If more than four constituents are recycled, attach additional sheets using this same format.

V. DOCUMENTATION OF KNOWN MARKET (Offsite recyclers only)

DOCUMENTATION IS ATTACHED: Offsite recyclers must attach documentation that there was a known market for disposition of the recyclable material and any products manufactured from the recyclable materials and provide copy of this report to the generator when the report is submitted to the CUPA or PA. (HSC Section 25143.10(a)(3)(A)) 552

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT
		INSPECTOR

**INSTRUCTIONS FOR THE UNIFIED PROGRAM (UP) FORM
Onsite Hazardous Waste Treatment Notification – Facility**

There are several treatment activities that, although they would be otherwise regulated, are exempt under the law provided certain conditions are met. Exempt treatment activities are described in Appendix A of these instructions (see below) and if your treatment activities are exempt then no notification is required for these activities.

If your treatment activities do not qualify for an exemption complete this page if your facility is a hazardous waste generator performing treatment of hazardous wastes at the site where the waste is generated, and the facility is eligible under the Conditional Exemption (CE), or Conditional Authorization (CA) tiers, or operates a Fixed Treatment Unit (FTU) under the Permit by Rule (PBR) tier. To determine which tier or tiers apply to your operations, refer to the DTSC Onsite Tiered Permitting Flow Chart, which graphically displays the eligible waste streams and treatment processes by tier.

Submit one facility page (Onsite Hazardous Waste Treatment Notification - Facility) per facility, regardless of the number of treatment units located at the site. Attach a unit specific page (Onsite Hazardous Waste Treatment Notification - Unit) and a Waste and Treatment Process Combinations page for each treatment unit at this location.

For notification requirements for PBR FTUs refer to 22 CCR § 67450.2, for CA refer to HSC § 25200.3(e) and (k), and for CE refer to HSC § 25201.5(d) and (i).

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.) Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME - Enter the full legal name of the business.
600. NOTIFICATION STATUS - Check whether this notification is your initial notification under the Tiered Permitting system, an amended notification, or a renewal (for PBR only).
601. PERMIT STATUS - Check the status of the permit for State issued hazardous waste permits or grants of authorization.
602. NUMBER OF UNITS - For each of the permitting tiers or categories listed, enter the number of units you operate at this facility location. Complete a unit specific notification page and a waste and treatment process page for each unit you list here, except for CE-CL units. Verify that the total number of units (item 602g) is equal to the number of unit specific notification and waste and treatment process pages included in the submittal plus the number of CE-CL units (item 602f).
- SIGNATURE OF OWNER/OPERATOR - The business owner or officer of the company who is authorized to make decisions for the facility and who has operational control, shall sign in the space provided. In most companies, this is not the environmental compliance or technical staff. The title should indicate that an appropriately authorized person is signing for the company. Original signatures are required. You are signing the certifications and attesting to their accuracy under penalty of law for submitting false information. The certifications cover waste minimization, the eligibility of the unit(s) for the indicated tier, the fact that the unit meets all of the operating requirements for that tier, and that the information is accurate. These operating requirements are set forth in the statutes and regulations.
603. DATE CERTIFIED - Enter the date that the page was signed.
604. OWNER/ OPERATOR NAME - Enter the full printed name of the person signing the page.
605. OWNER/ OPERATOR TITLE - Enter the title of the person signing the page.

REQUESTING A SHORTENED REVIEW PERIOD - Generators operating under CA and CE are legally authorized 60 days after submitting a complete notification. The time period between notification and authorization may be shortened when the owner or operator shows a good cause. Check whether or not you are requesting to be authorized sooner than the standard 60-day period, and state the reason for the request. The authorization will be automatically effective on the date the completed notification page is received by the CUPA. (If necessary, use additional sheets to explain your reasons.) Generators operating under the PBR tier are not authorized until they are notified by the CUPA.

ATTACHMENTS

NOTE: Commercial Laundries are not required to provide attachments.

ALL FACILITIES-

1. Complete a unit notification and a waste and treatment process page for EACH unit covered by this notification.
2. Provide a plot plan or map detailing the location or locations of the unit or units at this facility. This document is for use by the inspector. Clearly indicate the facility boundaries and major features. The extent or detail of the plot plan will vary depending on the size of the facility, the extent of the industrial operations, and the number of treatment units. A diagram prepared for the hazardous materials business plan (required by Title 19 CCR) may be used, as long as the unit numbers for the units covered by this notification are indicated.

PBR & CA ONLY

1. Complete the Certification of Financial Assurance for Closure and attach here (formerly DTSC Form 1232). Check whether you have Self-Certified (because your closure costs are less than \$10,000) or if you are submitting a financial mechanism.
2. Prior Enforcement History information is required ONLY if this facility was the subject of any convictions, judgments, settlements or final orders resulting from an action by any local, state, or federal environmental, hazardous waste, or public health enforcement agency. If applicable, attach a statement or summary that lists the cases for the last three years and provide a copy of the cover sheet from each document (conviction, settlement, etc.). The summary should include case and docket number, name and address of the agency, date, brief explanation, type of case (criminal, civil, administrative) and final resolution (including fines and penalties).

ADDITIONAL SUBMISSION TO DTSC:

A PHASE I ENVIRONMENTAL ASSESSMENT IS REQUIRED FROM ALL PBR AND CA FACILITIES AND MUST BE SUBMITTED TO DTSC, NOT TO YOUR CUPA. This assessment was due on January 1, 1997 or within one year from initial notification for newer facilities. Revisions are required if new releases are discovered.

The assessment checklist and instructions are available from [DTSC](http://www.dtsc.ca.gov) (www.dtsc.ca.gov). Call (916) 324-2423 or write to DTSC-Unified Program Section, P.O. Box 806, Sacramento, CA 95812-0806. Completed Phase I Assessments should be submitted to the same address.

PBR ONLY

1. Tank and/or containment system certifications are required to be submitted for only PBR units by 22 CCR § 67450.2(b)(3)(G), when applicable. The specific standards are in 22 CCR § 66264.175(c) for containers and 22 CCR § 66265.191(a) and 66265.192(a) for tanks.
2. Notification of local agencies. Attach documentation of the other local agencies notified of your operation, i.e. sewer agency.
3. Notification of property owner. If the property owner is different than the operator, provide documentation that the facility operator has notified the property owner of the operation of this hazardous waste treatment unit under PBR.

Appendix A - Exempt Treatment Activities

There are several treatment activities which, although they would be otherwise regulated, are exempt under the law provided certain conditions are met. No notification is required if these are the only treatment activities performed at the facility. These activities are:

1. Biotechnology Elementary Neutralization Activities - Refer to Health and Safety Code Section 25201.15

Biotechnology elementary neutralization activities are the elementary neutralization of wastes generated by biotechnology manufacturing or biotechnology process development activities. This includes activities conducted in SIC Code Subgroups 283, 2833, 2834, 2835, 2836, 8731, 8732, and 8733, including manufacturing and process development of medicinal chemicals and botanical products, pharmaceutical preparations, in vitro and in vivo diagnostic substances, and biological products, and all associated equipment and vessel cleaning and maintenance operations. These activities are exempt if ALL of the following conditions are met:

- A permit is not required to conduct elementary neutralization under federal law.
- The hazardous wastes are hazardous solely due to acidic or alkaline materials.
- Either of the following applies with regard to the biotechnology elementary neutralization activity:
 - a) The hazardous wastes in the elementary neutralization unit do not contain more than 10 percent by weight acid or alkaline constituents.
 - b) The generator determines the neutralization process will not raise the temperature of the hazardous wastes to within 10 degrees of the boiling point or cause the release of hazardous gaseous emissions.
- The hazardous wastes are not diluted for the sole purpose of meeting the criteria specified in subparagraph (a) above AND after neutralization the wastewaters do not exhibit the characteristic of corrosivity.
- The temperature of any unit 100 gallons or larger is automatically monitored, is fitted with a high temperature alarm system, and for closed systems, the unit automatically controls the adding and mixing of corrosive and neutralizing solutions.

2. Neutralization of Acid/ Alkaline Wastes from Regeneration of Ion Exchange Media - Refer to HSC section 25201.13(a)

NO authorization is needed to neutralize acid/alkaline wastes from regeneration of the ion exchange media used to demineralize water, if the waste contains less than or equal to 10 percent acid or base by weight.

3. Neutralization of Acid/ Alkaline Wastes from the Food Processing Industry - Refer to HSC section 25201.13(c)

NO authorization is needed to neutralize acid/alkaline wastes from the food processing industry.

4. Silver Recovery - Refer to HSC section 25143.13, amended by Senate Bill (SB) 2111 (1998).

NO authorization is needed for the recovery of silver (provided that the solutions and wastewaters are "silver-only" hazardous wastes, and are not hazardous for any other reason or constituent) from photofinishing/photoimaging solutions and photoimaging solution wastewaters. These wastes are regulated only to the extent they are regulated under the federal Resource Conservation and Recovery Act.

5. Sieving or Filtering Under Limited Conditions - Refer to HSC section 25123.5(b)(2)(A), amended by Assembly Bill (AB) 966 (1998).

NO authorization is needed for sieving or filtering liquid hazardous waste to remove solid fractions, WITHOUT added heat, chemicals, or pressure, as the waste is added to or removed from a storage or accumulation tank or container, if the activity is conducted onsite. For this exemption, sieving or filtering does not include adsorption, reverse osmosis, or ultrafiltration.

5. Phase Separation Under Limited Conditions - Refer to HSC section 25123.5(b)(2)(B), amended by AB 966 (1998).

NO authorization is needed for phase separation of hazardous waste during storage or accumulation in tanks or containers, if the separation is unaided by the addition of heat or chemicals, and the activity is conducted onsite.

7. Combination of Wastestreams Under Limited Conditions - Refer to HSC section 25123.5(b)(2)(C), amended by AB 966 (1998).

NO authorization is needed for combining two or more waste streams that are not incompatible into a single tank or container if the activity is conducted onsite and BOTH of the following conditions apply:

a) The waste streams are being combined solely for the purpose of consolidated accumulation or storage or consolidated offsite shipment, and they are NOT being combined to meet a fuel specification or to otherwise be chemically or physically prepared to be treated, burned for energy value, or incinerated.

b) The combined waste stream is managed in compliance with the most stringent of the regulatory requirements applicable to each individual waste stream.

8. Evaporation of Water Under Limited Conditions - Refer to HSC section 25123.5(b)(2)(D), amended by AB 966 (1998).

NO authorization is needed for evaporation of water from hazardous wastes in tanks or containers, such as breathing and evaporation through vents and floating roofs, WITHOUT the addition of pressure, chemicals, or heat other than sunlight or ambient room lighting or heating, if the activity is conducted onsite.

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Onsite Hazardous Waste Treatment Notification – Unit

Complete a unit specific page (Onsite Hazardous Waste Treatment Notification - Unit) and a Waste and Treatment Process Combinations page for each treatment unit operating at this facility. Commercial Laundries are *not* required to complete unit specific pages, provided that laundering is the only hazardous waste treatment activity conducted by the facility.

(Note: the numbering of the instructions follows the data element numbers that are on the UP FORM pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.) Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME - Enter the full legal name of the business.
- 606 UNIT ID NUMBER - Enter a unique number for each unit. The units can be numbered sequentially, or by any other system as long as the numbers are not repeated or duplicated. All unit numbers must be clearly labeled on the plot plan/map.
- 607 UNIT TYPE / TIER - Check the unit type under the Tiered Permitting program.
- 608 NUMBER OF TANKS - Enter the number of tanks used in the unit. Tank means a stationary device, designed to contain an accumulation of hazardous waste, which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (22 CCR § 66260.10).
- 609 NUMBER OF CONTAINERS/ TREATMENT AREAS - Enter the number of containers/ container treatment used in the unit. Container means any device that is open or closed, and portable in which a material can be stored, handled, treated, transported, recycled, or disposed of (22 CCR § 66260.10). Container treatment area is the location set aside and used to treat containers.
- 610 UNIT NAME - Enter the name of the treatment unit. A treatment unit is defined as a tank, a container, or a combination of tanks or tank systems and/or containers located together that are used in sequence to treat or accumulate one or more compatible hazardous waste streams. The devices are either plumbed together or otherwise linked so as to form one system.
- 611 MONTHLY TREATMENT VOLUME - Enter the estimated monthly total volume of hazardous waste treated in each unit. If the volume fluctuates significantly by month, enter the maximum or highest volume treated in any month.
- 612 UNIT OF MEASURE - Check whether the treatment volume unit of measure is pounds or gallons.
- 613 SPECIFIC WASTE TYPE TREATED - Describe the specific waste type(s) treated. For example, if waste qualifies as an aqueous waste with metal or organics, indicate the specific metals or organics.
- 614 TREATMENT PROCESS DESCRIPTION - Describe the treatment process(es) used. Indicate if the activities are seasonal or periodic.
- 615 BASIS FOR NOT NEEDING FEDERAL PERMIT - Check the reason(s) that best describe why your onsite treatment unit does not need a federal hazardous waste permit. You must indicate at least one reason to prove your eligibility for the onsite treatment tiers. If you are unsure how these exemptions apply to your operation, contact your CUPA, the DTSC Regional Office closest to you, the U.S. EPA's Region IX RCRA Information Line at (415) 744-2074, or the U.S. EPA RCRA Hotline at (800) 424-9346. The eight most common reasons for not needing a federal permit are listed on the page. There is also a space to specify another reason and a citation. The following terms used on the page are defined in 40 CFR 260.10:
 - ◆ wastewater treatment unit means a device which (1) is part of a wastewater treatment facility regulated under section 402 or 307(b) of the Clean Water Act, and (2) receives and treats or stores an influent wastewater that is a hazardous waste or that generates and accumulates a wastewater treatment sludge that is a hazardous waste or that treats or stores a wastewater treatment sludge which is a hazardous waste, and (3) meets the definition of tank or tank system.
 - ◆ elementary neutralization unit means a device which (1) is used for neutralizing wastes that are hazardous only because they exhibit the corrosivity characteristic or they are listed only for this reason, and (2) meets the definition of tank, tank system, container, transport vehicle, or vessel.
 - ◆ totally enclosed treatment facility means a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment.
 - ◆ NPDES permit: A permit issued by a regional water board allowing discharge of waste to the environment under the National Pollutant Discharge Elimination System (NPDES).
- 616 RESIDUALS MANAGEMENT DESCRIPTION - Check the management of residuals. If appropriate, describe "other" method of handling the residuals.
- 617 SECONDARY CONTAINMENT INSTALLATION DATE - Enter the date the secondary containment was installed.

UNIFIED PROGRAM (UP) FORM ONSITE HAZARDOUS WASTE TREATMENT NOTIFICATION – UNIT PAGE

(one page and attachments per unit)

Page ___ of ___

FACILITY ID#	1	BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)	3
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I. TREATMENT UNIT

UNIT ID# 606	UNIT TYPE/TIER 607	NUMBER OF TANKS 608	NUMBER OF CONTAINERS /TREATMENT AREAS 609
	<input type="checkbox"/> a GESQT <input type="checkbox"/> b CESW <input type="checkbox"/> c CA <input type="checkbox"/> d PBR <input type="checkbox"/> e CEL		
UNIT NAME 610		MONTHLY TREATMENT VOLUME 611	UNIT OF MEASURE 612
			<input type="checkbox"/> a Pounds <input type="checkbox"/> b Gallons

SPECIFIC WASTE TYPE TREATED (narrative)	613

TREATMENT PROCESS DESCRIPTION (narrative)	614

(NOTE: for each treatment unit, complete and attach the appropriate Waste And Treatment Process Combinations page)

II. BASIS FOR NOT NEEDING FEDERAL PERMIT (Check all that apply)

<input type="checkbox"/> a. The treated waste is not a hazardous waste under federal law (California-only waste). <input type="checkbox"/> b. Treated in waste water treatment units (tanks) and discharged to a Publicly Owned Treatment Works (POTW)/ sewerage agency or under an NPDES permit. <input type="checkbox"/> c. Treatment in elementary neutralization units. <input type="checkbox"/> d. Treatment in a totally enclosed treatment facility. <input type="checkbox"/> e. Federal conditionally exempt small quantity generator (generated 100 kg, approximately 27 gallons, or less of hazardous waste in a calendar month).	<input type="checkbox"/> f. Treatment in an accumulation tank or container within 90 days for over 1000 kg/month generators and 180 or 270 days for generators of 100 to 1000 kg/month. <input type="checkbox"/> g. Recyclable materials are reclaimed to recover silver or other precious metals. <input type="checkbox"/> h. Empty container rinsing and/or treatment. <input type="checkbox"/> i. Other (specify below) _____	615
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III. RESIDUALS MANAGEMENT DESCRIPTION (Check all that apply)

<input type="checkbox"/> a. Discharge non-hazardous aqueous waste to POTW or sewer. <input type="checkbox"/> b. Discharge non-hazardous aqueous waste under a NPDES permit. <input type="checkbox"/> c. Dispose of non-hazardous solid waste residues at an offsite location.	Residual hazardous waste hauled offsite by a registered hauler. <input type="checkbox"/> d. Offsite recycling <input type="checkbox"/> e. Thermal treatment <input type="checkbox"/> f. Disposal to land <input type="checkbox"/> g. Further treatment <input type="checkbox"/> h. Other method of disposal (describe below) _____	616
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SECONDARY CONTAINMENT INSTALLATION DATE (If required)	617

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT
		INSPECTOR

Waste and Treatment Process Combinations

The Waste and Treatment Process Combinations pages list those waste and treatment combinations certified by DTSC pursuant to HSC § 25200.1.5 for authorization under CE, CA, and PBR tiers. Each page is specific to a tier, with each tier specific page listing the wastes and treatment processes eligible under that tier. Note that some of the categories have volume or concentration restrictions that must be met in order to qualify for that tier. Additionally, some of the wastes refer to 22 CCR and others to the Health and Safety Code.

Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

606. UNIT ID NUMBER - Enter the unit ID number (same as item 606 from the Onsite Hazardous Waste Treatment Notification - Unit page).

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT	Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW	
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA	
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR	
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL	

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex	SCIGEN
Cert. #. 97-01-0024	333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov/.

**UNIFIED PROGRAM (UP) FORM
ONSITE HAZARDOUS WASTE TREATMENT: CONDITIONALLY EXEMPT SMALL QUANTITY TREATMENT (CESQT)**

WASTE AND TREATMENT PROCESS COMBINATIONS (one page per treatment unit - check all that apply)

UNIT ID# _____ 606 Facility ID# _____ 1 Page _____ of _____

CESQT = treats < 55 gallons or 500 pounds of hazardous waste in any calendar month in ALL units at this facility (NOT a limit for each wastestream or unit separately). CESQT generators may not hold other state or federal hazardous waste permit or authorization for this facility, including other onsite tiers.

- 627
1. **Aqueous wastes containing hexavalent chromium may be treated by the following process:**
 - a. Reduction of hexavalent chromium to trivalent chromium with sodium bisulfite, sodium metabisulfite, sodium thiosulfate, ferrous sulfate, ferrous sulfide or sulfur dioxide provided both pH and addition of the reducing agent are automatically controlled.

 2. **Aqueous wastes containing metals listed in Title 22, CCR, Section 66261.24 (a)(2) and/or fluoride salts may be treated by the following technologies:**
 - a. pH adjustment or neutralization.
 - b. Precipitation or crystallization.
 - c. Phase separation by filtration, centrifugation or gravity settling.
 - d. Ion exchange.
 - e. Reverse osmosis.
 - f. Metallic replacement.
 - g. Plating the metal onto an electrode.
 - h. Electrodialysis
 - i. Electrowinning or electrolytic recovery
 - j. Chemical stabilization using silicates and/or cementitious types of reactions.
 - k. Evaporation.
 - l. Adsorption

 3. **Aqueous wastes with total organic carbon less than 10% as measured by EPA Method 9060 and less than 1% total volatile organic compounds as measured by EPA Method 8240 may be treated by the following technologies::**
 - a. Phase separation by filtration, centrifugation or gravity settling, but excluding super critical fluid extraction.
 - b. Adsorption.
 - c. Distillation.
 - d. Biological processes conducted in tanks or containers and utilizing naturally occurring microorganisms.
 - e. Photodegradation using ultraviolet light, with or without the addition of hydrogen peroxide or ozone, provided the treatment is conducted in an enclosed system.
 - f. Air stripping or steam stripping.

 4. **Sludges, dusts, solid metal objects and metal workings which contain or are contaminated with metals listed in Title 22, CCR, Section 66261.24 (a)(2) and/or fluoride salts may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Physical processes which change only the physical properties of the waste such as grinding, shredding, crushing or compacting.
 - c. Drying to remove water.
 - d. Separation based on differences in physical properties such as size, magnetism or density.

 5. **Alum, gypsum, lime, sulfur or phosphate sludges may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Drying to remove water.
 - c. Phase separation by filtration, centrifugation or gravity settling.

 6. **Wastes identified in Title 22, CCR, Section 66261.120, that meet the criteria and requirements for special waste classification in Section 66261.22 may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Drying to remove water.
 - c. Phase separation by filtration, centrifugation or gravity settling.
 - d. Screening to separate components based on size.
 - e. Separation based on differences in physical properties such as size, magnetism or density.

 7. **Wastes, except asbestos, which have been classified by the Department as special wastes pursuant to Title 22, CCR, Section 66261.124, may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Drying to remove water
 - c. Phase separation by filtration, centrifugation or gravity settling.
 - d. Magnetic separation

 8. **Inorganic acid or alkaline wastes may be treated by the following technology:**
 - a. pH adjustment or neutralization.

 9. **Soils contaminated with metals listed in Title 22, CCR, Section 66261.24(a)(2), (Persistent and Bioaccumulative Toxic Substances) may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Screening to separate components based on size.
 - c. Magnetic separation.

 10. **Used oil, unrefined oil waste, mixed oil, oil mixed with water and oil/water separation sludges may be treated by the following technologies:**
 - a. Phase separation by filtration, centrifugation or gravity settling, but excluding super critical fluid extraction.
 - b. Distillation.
 - c. Neutralization.
 - d. Separation based on differences in physical properties such as size, magnetism or density.
 - e. Reverse osmosis.
 - f. Biological processes conducted in tanks or containers and utilizing naturally occurring microorganisms.

 11. **Containers of 110 gallons or less capacity which are not constructed of wood, paper, cardboard, fabric, or any other similar absorptive material, which have been emptied as specified in Title 40 of the Code of Federal Regulations, section 261.7 or inner liners removed from empty containers that once held hazardous waste or hazardous material and which are not excluded from regulation may be treated by the following technologies provided the treated containers and rinseate are managed in compliance with applicable requirements.**
 - a. Rinsing with a suitable liquid capable of dissolving or removing the hazardous constituents which the container held.
 - b. Physical processes such as crushing, shredding, grinding or puncturing, that change only the physical properties of the container or inner liner, provided the container or inner liner is first rinsed and the rinseate is removed from the container or inner liner.

 12. **Multi-component resins may be treated by the following process:**
 - a. Mixing the resin components in accordance with the manufacturer's instructions.

 13. **A waste stream technology combination certified by the Department pursuant to Section 25200.1.5 of the Health and Safety Code as appropriate for authorization under CESQT.**
 - _____ Certified Technology Number

Waste and Treatment Process Combinations

The Waste and Treatment Process Combinations pages list those waste and treatment combinations certified by DTSC pursuant to HSC § 25200.1.5 for authorization under CE, CA, and PBR tiers. Each page is specific to a tier, with each tier specific page listing the wastes and treatment processes eligible under that tier. Note that some of the categories have volume or concentration restrictions that must be met in order to qualify for that tier. Additionally, some of the wastes refer to 22 CCR and others to the Health and Safety Code.

Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

606. UNIT ID NUMBER - Enter the unit ID number (same as item 606 from the Onsite Hazardous Waste Treatment Notification - Unit page).

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT	Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW	
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA	
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR	
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL	

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex Cert. #: 97-01-0024	SCIGEN 333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov.

UNIFIED PROGRAM (UP) FORM
ONSITE HAZARDOUS WASTE TREATMENT
CONDITIONALLY EXEMPT – SPECIFIED WASTESTREAMS (CESW) PAGE
WASTE AND TREATMENT PROCESS COMBINATIONS (one page per treatment unit – check all that apply)

UNIT ID# _____

606

Facility ID# _____

1

Page ___ of ___

628

- 1. Treating resins mixed or cured in accordance with the manufacturer's instructions (including one-part and pre-impregnated materials).
- 2. Treating a container of 110 gallons or less capacity, which is not constructed of wood, paper, cardboard, fabric or any other similar absorptive materials, for the purposes of emptying the container as specified by Section 66261.7 of Title 22 of the California Code of Regulations, as revised July 1, 1990, or treats the inner liners removed from empty containers that once held hazardous waste or hazardous material. The generator shall treat the container or inner liner by using the following technologies, provided the treated containers and rinseate are managed in compliance with the applicable requirements of this chapter:
 - (A) The generator rinses the container or inner liner with a suitable liquid capable of dissolving or removing the hazardous constituents which the container held, and/or,
 - (B) The generator uses physical processes, such as crushing, shredding, grinding, or puncturing, that change only the physical properties of the container or inner liner, if the container or inner liner is first rinsed as provided in subparagraph (A) and the rinseate is removed from the container or inner liner.
- 3. Drying special wastes, as classified by the Department pursuant to Title 22, CCR, Section 66261.124, by pressing or by passive or heat-aided evaporation to remove water.
- 4. Magnetic separation or screening to remove components from special waste, as classified by the Department pursuant to Title 22, CCR, Section 66261.124.
- 5. Not in use/exempted—formerly neutralization and regeneration or ion exchange media used to demineralize water.
- 6. Not in use/exempted—formerly neutralization of food processing waste.
- 7. Not in use/exempted—formerly recovery of silver from photofinishing.
- 8. Gravity separation of the following, including the use of flocculants and demulsifiers if:
 - a. The settling of solids from the waste where the resulting aqueous/liquid stream is not hazardous.
 - b. The separation of oil/water mixtures and separation sludges, if the average oil recovered per month is less than 25 barrels (42 gallons per barrel). (Note: some used oil/water separation is eligible for CEL.)
- 9. Neutralizing acidic or alkaline (basic) material by a state certified laboratory, a laboratory operated by an educational institution, or a laboratory which treats less than one gallon of onsite generated hazardous waste in any single batch. (To be eligible for conditional exemption, this waste cannot contain more than 10 percent acid or base by weight.)
- 10. Hazardous waste treatment is carried out in quality control or quality assurance laboratory at a facility that is not an offsite hazardous waste facility.
- 11. A wastestream and treatment technology combination certified by the Department pursuant to Section 25200.1.5 of the Health and Safety Code as appropriate for authorization under CESW.
Certified Technology Number _____
- 12. The treatment of formaldehyde or glutaraldehyde by a health care facility using a technology combination certified by the Department pursuant to section 25200.1.5 of the Health and Safety Code.
Certified Technology Number _____

Waste and Treatment Process Combinations

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Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

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1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT	Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW	
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA	
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR	
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL	

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex	SCIGEN
Cert. #: 97-01-0024	333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov.

UNIFIED PROGRAM (UP) FORM
ONSITE HAZARDOUS WASTE TREATMENT
CONDITIONALLY EXEMPT – LIMITED (CEL) PAGE
WASTE AND TREATMENT PROCESS COMBINATIONS

(one page per treatment unit – check all that apply))

Unit ID# _____

606

Facility ID# _____

1

Page ___ of ___

631

1. Puncturing, draining, or crushing of aerosol cans, at ambient temperature, using equipment or technology combination certified by the Department of Toxic Substances control (DTSC) pursuant to section 25200.1.5 of the Health and Safety Code. The equipment must capture gaseous and liquid contents, prevent fire, explosion, and unauthorized

_____ Certified Technology Number

NOTE: This category is not available until DTSC certifies a manufacturer's equipment.

2. The separation of used oil from water, provided that the wastestream is hazardous solely due to the oil and the used oil is properly transported to an authorized offsite oil recycler. Treatment using:

- a. Gravity separation.
- b. A centrifuge.
- c. A membrane technology.
- d. Heating of the water containing used oil to a temperature that is not more than 20 degrees Fahrenheit below the flashpoint of the used oil component of the mixture at atmospheric pressure.
- e. The addition of demulsifiers to the water containing used oil.

NOTE: The authorized separation of used oil from water under this wastestream may not include contaminated groundwater or water containing any measurable amounts of gasoline or more than two percent (2%) diesel fuel (combination of Number 1 or 2 fuel).

Waste and Treatment Process Combinations

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Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

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1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL

Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex	SCIGEN
Cert. #: 97-01-0024	333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov.

UNIFIED PROGRAM (UP) FORM

ONSITE HAZARDOUS WASTE TREATMENT - CONDITIONALLY AUTHORIZED (CA) PAGE

WASTE AND TREATMENT PROCESS COMBINATIONS

(one page per treatment unit – check all that apply)

Unit ID# _____

606

Facility ID# _____

1

Page ___ of ___

1. **Aqueous wastes, hazardous solely due to inorganic constituents, except asbestos, listed in Title 22, CCR, Section 66261.24(a)(1)(B) or (a)(2)(A) and which contain less than 1,400 ppm total of these constituents. (There is no volume limit for this wastestream.) Treatment using:** 629
- a. Phase separation, including precipitation, by filtration, centrifugation, or gravity settling, including the use of demulsifiers and flocculants.
 - b. Ion exchange, including metallic replacement
 - c. Reverse osmosis
 - d. Adsorption
 - e. pH adjustment of aqueous waste with a pH of between 2.0 and 12.5
 - f. Electrowinning of solutions, unless those solutions contain hydrochloric acid
 - g. Reduction of solutions hazardous solely due to hexavalent chromium, to trivalent chromium with sodium bisulfite, sodium metabisulfite, sodium thiosulfate, ferrous chloride, ferrous sulfate, ferrous sulfide, or sulfur dioxide. The solution contains less than 750 ppm of hexavalent chromium.
2. **Aqueous wastes, hazardous solely due to organic constituents listed in Title 22, CCR, Section 66261.24(a)(1)(B) or (2)(B) and which contain less than 750 ppm total of these constituents. (There is no volume limit for this wastestream.) Treatment using:**
- a. Phase separation by filtration, centrifugation, or gravity settling, but excluding super critical fluid extraction.
 - b. Adsorption
3. **Sludges resulting from wastewater treatment, dusts, solid metal objects, and metal workings which are hazardous solely due to the presence of constituents, except asbestos, listed in Title 22, CCR, Section 66261.24(a)(1)(B) or (a)(2)(A) and which, for dusts only, contain less than 750 ppm total of these constituents. The monthly volume treated in this unit does not exceed 5,000 gallons or 45,000 pounds. Treatment using:**
- a. Physical processes which constitute treatment only because they change the physical properties of the waste, such as filtration, centrifugation, gravity settling, grinding, shredding, crushing, or compacting.
 - b. Drying to remove water.
 - c. Separation based on differences in physical properties, such a size, magnetism, or density.
4. **Alum, gypsum, lime, sulfur, or phosphate sludges. The monthly volume treated in this unit does not exceed 5,000 gallons or 45,000 pounds. Treatment using:**
- a. Drying to remove water.
 - b. Phase separation by filtration, centrifugation, or gravity settling.
5. **Special wastes listed in Title 22, CCR, Section 66261.120 that meet the criteria in Title 22, CCR, Section 66261.122 which is hazardous solely due to the constituents, except asbestos, listed in Title 22, CCR, Section 66261.24(a)(1)(B) or (a)(2)(A) and which contain less than 750 ppm total of these constituents. The monthly volume treated in this unit does not exceed 5,000 gallons or 45,000 pounds. Treatment using:**
- a. Drying to remove water.
 - b. Phase separation by filtration, centrifugation, or gravity settling.
 - c. Screening to separate components based on size.
 - d. Separation based on differences in physical properties, such as size, magnetism, or density.
6. **Special wastes classified under Title 22, CCR, Section 66261.124 as special wastes, except asbestos, which is hazardous solely due to the constituents, except asbestos, listed in Title 22, CCR, Section 66261.24(a)(1)(B) or (a)(2)(A) and which contain less than 750 ppm total of these constituents. The monthly volume treated in this unit does not exceed 5,000 gallons or 45,000 pounds. Treatment using:**
- a. Drying to remove water.
 - b. Phase separation by filtration, centrifugation, or gravity settling.
 - c. Magnetic separation
7. **Soils contaminated with metals listed in Title 22, CCR, Section 66261.24(a)(2)(A). The monthly volume treated in this unit does not exceed 5,000 gallons or 45,000 pounds. Treatment using:**
- a. Screening to separate components based on size.
 - b. Magnetic separation.
8. **Oil mixed with water and oil/water separation sludges. (There is no volume limit for this wastestream.) Treatment using:** (NOTE: Some used oil/water separation is allowed under the CEL category.)
- a. Phase separation by filtration, centrifugation, or gravity settling, but excluding super critical fluid extraction, including the use of demulsifiers and flocculants. Heat can be used, but must not exceed 160 degrees Fahrenheit.
 - b. Separation based on differences in physical properties, such a size, magnetism, or density.
 - c. Reverse osmosis.
9. **Neutralization of acidic or alkaline wastes, hazardous solely due to corrosivity, or toxic only from the acid or caustic material, in elementary neutralization units. (There is no volume limit for this wastestream.)**
- a. The waste contains less than 10 percent acid or base constituents by weight. There is no volume limit for this category.
 - b. The waste contains 10 percent or more acid or base constituents by weight and is treated in batches that do not exceed 500 gallons at one time.
10. **Not in use/exempted—formerly recovery of silver from photofinishing.**
11. **Not in use/sunsetted—formerly treatment of spent cleaners and conditioners which are hazardous solely due to copper or copper compounds. Treatment of this wastestream is no longer allowed under Conditional Authorization as of January 1, 1998. Treatment of this wastestream now requires authorization under either Permit by Rule or, if the total volume treated is less than 55 gallons per month, under Conditionally Exempt Small Quantity Treatment.**
12. **A wastestream technology combination certified by the Department pursuant to Section 25200.1.5 of the Health and Safety Code as appropriate for authorization under Conditional Authorization.**
- Certified Technology Number _____

Waste and Treatment Process Combinations

The Waste and Treatment Process Combinations pages list those waste and treatment combinations certified by DTSC pursuant to HSC § 25200.1.5 for authorization under CE, CA, and PBR tiers. Each page is specific to a tier, with each tier specific page listing the wastes and treatment processes eligible under that tier. Note that some of the categories have volume or concentration restrictions that must be met in order to qualify for that tier. Additionally, some of the wastes refer to 22 CCR and others to the Health and Safety Code.

Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

(Note: the numbering of the instructions follows the data element numbers that are on the UP FORM pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

606. UNIT ID NUMBER - Enter the unit ID number (same as item 606 from the Onsite Hazardous Waste Treatment Notification - Unit page).

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT	Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW	
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA	
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR	
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL	

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex	SCIGEN
Cert. #: 97-01-0024	333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov.

**UNIFIED PROGRAM (UP) FORM
ONSITE HAZARDOUS WASTE TREATMENT
PERMIT BY RULE (PBR) PAGE**

WASTE AND TREATMENT PROCESS COMBINATIONS (one page per treatment unit – check all that apply)

Unit ID# _____ 606 Facility ID# _____ 1 Page _____ of _____ 630

1. **Aqueous waste containing hexavalent chromium may be treated by the following process:**
 - a. Reduction of hexavalent chromium to trivalent chromium with sodium bisulfite, sodium metabisulfite, sodium thiosulfate, ferrous sulfate, ferrous sulfide or sulfur dioxide provided both pH and addition of the reducing agent are automatically controlled.
2. **Aqueous wastes containing metals listed in Title 22, CCR, Section 66261.24 (a)(2) and/or fluoride salts may be treated by the following technologies:**

<ul style="list-style-type: none"><input type="checkbox"/> a. pH adjustment or neutralization<input type="checkbox"/> b. Precipitation or crystallization<input type="checkbox"/> c. Phase separation by filtration, centrifugation, or gravity settling<input type="checkbox"/> d. Ion exchange<input type="checkbox"/> e. Reverse osmosis<input type="checkbox"/> f. Metallic replacement	<ul style="list-style-type: none"><input type="checkbox"/> g. Plating the metal onto an electrode.<input type="checkbox"/> h. Electrodialysis.<input type="checkbox"/> i. Electrowinning or electrolytic recovery.<input type="checkbox"/> j. Chemical stabilization using silicates and/or cementitious types of reactions.<input type="checkbox"/> k. Evaporation.<input type="checkbox"/> l. Adsorption.
--	--
3. **Aqueous wastes with total organic carbon less than 10% as measured by EPA Method 9060 and less than 1% total volatile organic compounds as measured by EPA Method 8240 may be treated by the following technologies:**
 - a. Phase separation by filtration, centrifugation or gravity settling, but excluding super critical fluid extraction.
 - b. Adsorption.
 - c. Distillation.
 - d. Biological processes conducted in tanks or containers and utilizing naturally occurring microorganisms.
 - e. Photodegradation using ultraviolet light, with or without the addition of hydrogen peroxide or ozone, provided the treatment is conducted in an enclosed system.
 - f. Air stripping or steam stripping.
4. **Sludges, dusts, solid metal objects and metal workings which contain or are contaminated with metals listed in Title 22, CCR, Section 66261.24(a)(2) and/or fluoride salts may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Physical processes which change only the physical properties of the waste such as grinding, shredding, crushing, or compacting.
 - c. Drying to remove water.
 - d. Separation based on differences in physical properties such as size, magnetism or density.
5. **Alum, gypsum, lime, sulfur or phosphate sludges may be treated by the following technologies:**

<ul style="list-style-type: none"><input type="checkbox"/> a. Chemical stabilization using silicates and/or cementitious types of reactions.<input type="checkbox"/> b. Drying to remove water	<ul style="list-style-type: none"><input type="checkbox"/> c. Phase separation by filtration, centrifugation or gravity settling.
---	---
6. **Wastes identified in Title 22, CCR, Section 66261.120, that meet the criteria and requirements for special waste classification in Section 66261.122 may be treated by the following technologies:**
 - a. Chemical stabilization using silicates and/or cementitious types of reactions.
 - b. Drying to remove water.
 - c. Phase separation by filtration, centrifugation or gravity settling.
 - d. Screening to separate components based on size.
 - e. Separation based on differences in physical properties such as size, magnetism or density.
7. **Wastes, except asbestos, which have been classified by the Department as special wastes pursuant to Title 22, CCR, Section 66261.124, may be treated by the following technologies:**

<ul style="list-style-type: none"><input type="checkbox"/> a. Chemical stabilization using silicates and/or cementitious types of reactions.<input type="checkbox"/> b. Drying to remove water.	<ul style="list-style-type: none"><input type="checkbox"/> c. Phase separation by filtration, centrifugation or gravity settling.<input type="checkbox"/> d. Magnetic separation.
--	--
8. **Inorganic acid or alkaline wastes may be treated by the following technology:**
 - a. pH adjustment or neutralization.
9. **Soils contaminated with metals listed in Title 22, CCR, Section 66261.24(a)(2), (Persistent and Bioaccumulative Toxic Substances) may be treated by the following technologies:**

<ul style="list-style-type: none"><input type="checkbox"/> a. Chemical stabilization using silicates and/or cementitious types of reactions.<input type="checkbox"/> b. Screening to separate components based on size.	<ul style="list-style-type: none"><input type="checkbox"/> c. Magnetic separation.
--	--
10. **Used oil, unrefined oil waste, mixed oil, oil mixed with water and oil/water separation sludges may be treated by the following technologies:**
 - a. Phase separation by filtration, centrifugation or gravity settling, but excluding super critical fluid extraction.
 - b. Distillation.
 - c. Neutralization
 - d. Separation based on differences in physical properties such as size, magnetism or density.
 - e. Reverse osmosis.
 - f. Biological processes conducted in tanks or containers and utilizing naturally occurring microorganisms.
11. **Containers of 110 gallons or less capacity which are not constructed of wood, paper, cardboard, fabric or any other similar absorptive material, which have been emptied as specified in Title 40 of the Code of Federal Regulations, Section 261.7 or inner liners removed from empty containers that once held hazardous waste or hazardous material and which are not excluded from regulation may be treated by the following technologies provided the treated containers and rinseate are managed in compliance with applicable requirements.**
 - a. Rinsing with a suitable liquid capable of dissolving or removing the hazardous constituents which the container held.
 - b. Physical processes such as crushing, shredding, grinding or puncturing, that change only the physical properties of the container or inner liner, provided the container or inner liner is first rinsed and the rinseate is removed from the container or inner liner.
12. **Multi-component resins may be treated by the following process:**
 - a. Mixing the resin components in accordance with the manufacturer's instructions.
13. **A waste stream technology combination certified by the Department pursuant to Section 25200.1.5 of the Health and Safety Code as appropriate for authorization under Permit by Rule.**

Certified Technology Number

- 14. Aqueous wastes generated by rinsing products and fixtures holding products that were processed in cyanide containing solutions may be treated by the following technologies:**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis
- 15. Aqueous wastes generated by reverse osmosis or the regeneration of demineralizer (ion exchange) columns that were used for recycling of wastewaters at facilities that maintain zero discharge of wastewaters derived from the treatment of cyanide-containing aqueous waste**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis
- 16. Rinsate from rinsing equipment used to transfer aqueous solutions containing cyanides such as containers, pumps, and hoses may be treated by the following technologies:**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis
- 17. Aqueous wastes generated by the following onsite recycling activities 1) Rinsing spent anode bags prior to onsite reuse; or 2) Rinsing empty containers prior to onsite reuse may be treated by the following technologies:**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis
- 18. Aqueous wastes generated by onsite laboratories conducting analyses and testing may be treated by the following technologies:**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis
- 19. Process solutions containing cyanides with recoverable amounts of metal may be treated by the following technology:**
- Electrowinning to recover metals prior to further treatment, including destruction of incidental amounts of cyanide by electrochemical oxidation resulting from the electrowinning process
- 20. Process solutions containing cyanides added slowly to a rinse tank at a level that never exceeds 5000 milligrams per liter cyanide in the rinse tank may be treated by the following technologies:**
- Oxidation by addition of hypochlorite
 - Oxidation by addition of peroxide or ozone, with or without the use of ultraviolet light
 - Alkaline chlorination
 - Electrochemical oxidation
 - Ion exchange
 - Reverse osmosis

Waste and Treatment Process Combinations

The Waste and Treatment Process Combinations pages list those waste and treatment combinations certified by DTSC pursuant to HSC § 25200.1.5 for authorization under CE, CA, and PBR tiers. Each page is specific to a tier, with each tier specific page listing the wastes and treatment processes eligible under that tier. Note that some of the categories have volume or concentration restrictions that must be met in order to qualify for that tier. Additionally, some of the wastes refer to 22 CCR and others to the Health and Safety Code.

Complete one Waste and Treatment Process Combinations page for each unit, except CE-CL units.

(Note: the numbering of the instructions follows the data element numbers that are on the UP FORM pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, division 3, subdivision 1, chapter 1-5.)

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

606. UNIT ID NUMBER - Enter the unit ID number (same as item 606 from the Onsite Hazardous Waste Treatment Notification - Unit page).

2. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.

627. WASTE AND TREATMENT PROCESS COMBINATIONS - CESQT	Use the correct page for the unit. Check the waste and treatment process(es) that pertain to the unit. If the process is a technology certified by DTSC, please enter the Certified Technology Number (Cert. #). Certified technologies appropriate for authorization, and the eligible tiers, are listed below.
628. WASTE AND TREATMENT PROCESS COMBINATIONS - CESW	
629. WASTE AND TREATMENT PROCESS COMBINATIONS - CA	
630. WASTE AND TREATMENT PROCESS COMBINATIONS - PBR	
631. WASTE AND TREATMENT PROCESS COMBINATIONS - CEL	

Note that reactive and extremely hazardous wastes are not allowed to be treated under any of the onsite treatment tiers, except for certain wastes under Conditionally Exempt - Specified Wastestreams.

CERTIFIED TECHNOLOGIES

DTSC is authorized to certify hazardous waste technologies. Appropriate certified technologies may be eligible for CE, CA or PBR onsite treatment tiers. As of April 1, 1999, there is one certified technology for these tiers. The certification is for aldehyde treatment processes and is eligible for the CESW tier. The approved technology is:

Neutralex Cert. #. 97-01-0024	SCIGEN 333 East Gardena Blvd. Gardena, CA 90248
Effective Date:	June 29, 1997 (expires June 29, 2000)
Description:	Batch treatment for 10 percent Formalin generated by medical, educational, and laboratory facilities. Chemically treats in a provided 8 liter vessel. After testing, allows for disposal to sanitary sewer.
Tier:	Authorized for the CESW tier.

A copy of published Certification Statements and additional updates may be obtained by contacting DTSC at (916) 322-3670 or from the Cal/EPA on-line Bulletin Board via modem at (916) 322-5041 or at www.dtsc.ca.gov.

Certification of Financial Assurance

This page is to be completed by the owner or operator of a Fixed Treatment Unit operating under Permit by Rule (PBR), or a generator operating pursuant to a grant of Conditional Authorization (CA). If this is a new facility, this certification should be attached to the Onsite Hazardous Waste Treatment Notification - Facility page. If this is an existing facility and you have previously submitted a Notification, the certification and the financial assurance mechanism may be submitted without another notification.

Permit by Rule (PBR) and Conditionally Authorized (CA) operations are required to provide financial assurance for closure costs (22 CCR §67450.13(b) and HSC §25245.4). However, you are eligible for an exemption from financial assurance requirements if closure cost estimates are not more than \$10,000 (22 CCR §67450.13(d)). PBR operations that operated less than thirty (30) days in any calendar year are also eligible for an exemption (22 CCR §67450.13(e)). Complete the page even if you qualify for an exemption.

An adjustment to the closure cost estimate for inflation is required to be completed by March 1 of each year. See HSC §67450.13(a)(2) for instructions on calculating the adjustment. This updated closure cost estimate must be maintained at the facility.

Refer to 22 CCR §67450.13 for financial assurance requirements.

Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.
 2. EPA ID NUMBER Enter the EPA ID number for the facility.
 3. BUSINESS NAME Enter the full legal name of the business.
 700. CERTIFICATION STATUS Check the reason the certification is being completed.
 701. TYPE OF OPERATION Check the type of operation. If type of operation is not listed, check "other" and indicate type in the space provided.
 702. ESTIMATED CLOSURE COSTS Enter the total estimated cost of closing each treatment unit and attach a written estimate of the closure costs.
The estimated closure cost may be either the actual cost or the estimated cost when using your own staff and/or equipment. The closure cost estimate may take into account any salvage value that may be realized from the sale of wastes, facility structure or equipment, land or other facility assets. Following is a model closure cost estimate:
- | ACTIVITY | COST |
|--|---------|
| 1. Removal, treatment (on-site or off-site), or disposal of waste inventories | _____ |
| 2. Removal and disposal of soil | _____ |
| 3. Decontamination of equipment and structure | _____ |
| 4. Demolition and removal of containment system components or structure | _____ |
| 5. Transportation | _____ |
| 6. Sampling and analysis of waste, soil, equipment, and structure | _____ |
| 7. Certification or other demonstration of closure ("clean" closure or specified level of decontamination) | _____ |
| 8. Other expenses (specify) | _____ |
| 9. Less Assets (salvage value of waste, equipment or property) | - _____ |
| TOTAL COST OF CLOSURE | = _____ |
- NOTE: For PBR only, if you have operated under PBR for less than 30 days in any calendar year, you qualify for an exemption. If eligible for the exemption, enter "EXEMPT" in this space.*
703. EXEMPTION FROM FINANCIAL ASSURANCE Check to claim the exemption from the financial assurance requirements for total closure cost estimate less than or equal to \$10,000. A model letter using the required certifications must be submitted to claim this exemption.
 704. EXEMPTION FROM FINANCIAL ASSURANCE - OTHER Check to claim "other" reason for exemption from financial assurance requirements. Describe the reason for the exemption in the space provided. Reference the applicable statute or regulation granting the exemption.
 705. EXEMPTION FROM FINANCIAL ASSURANCE <30 DAYS PER YEAR - Check to claim the exemption from financial assurance requirements for owner or operator under PBR only and operating no more than thirty days in any calendar year.
 706. REQUIREMENT FOR FINANCIAL ASSURANCE Check to indicate whether the financial assurance mechanism is attached.
 707. DATE OF CLOSURE ASSURANCE MECHANISM Enter the effective date of the closure financial assurance mechanism.
 708. MECHANISM ID NUMBER If applicable, enter the number of the closure assurance mechanism, for example, the insurance policy number.
 709. CLOSURE ASSURANCE MECHANISM Check to indicate the type of financial mechanism established to provide the closure cost assurance.
Eligible types are contained in 22 CCR §67450.13(a)(5). They are:
 1. A closure trust fund, as provided in 22 CCR §66265.143(a); DTSC Form 1154
 2. A surety bond guaranteeing payment into a closure trust fund, as described in 22 CCR §66265.143(b); either DTSC Form 1155 or 1156 with DTSC Form 1154
 3. A closure letter of credit, as described in 22 CCR §66265.143(c); DTSC Form 1157
 4. Closure insurance, as described in 22 CCR §66265.143(d); DTSC Form 1158
 5. A financial test and corporate guarantee for closure, as described in 22 CCR §66265.143(e); either DTSC Form 1159 or 1173
 6. An alternative mechanism for closure costs, as described in 22 CCR §67450.13(c); (no form)
 7. Use of multiple financial mechanisms for closure costs, as described in 22 CCR § 66265.143(g); (no form)
 8. A certificate of deposit, as described in section 3-104(2)(c) of the Uniform Commercial Code; (no form) or,
 9. A savings account, as described in section 4-104(a) of the Uniform Commercial Code; (no form).

These mechanisms require use of the additional DTSC Financial Assurance forms referenced above. These forms are available from the CUPA or PA or the DTSC Regional Office. When using these forms, verify that the beneficiary is the CUPA or PA, rather than DTSC.
 710. FINANCIAL INSTITUTION OR SURETY NAME For items 710-714, enter the name and address of the financial institution, insurance
 711. FINANCIAL INSTITUTION OR SURETY ADDRESS company, surety company, or other appropriate organization used to establish the closure
 712. FINANCIAL INSTITUTION OR SURETY CITY financial assurance. Indicate your company if you are using a corporate guarantee and
 713. FINANCIAL INSTITUTION OR SURETY STATE financial test.
 714. FINANCIAL INSTITUTION OR SURETY ZIP CODE
 715. SIGNER OF CERTIFICATION - Check to indicate whether the person certifying is the owner or the operator of the facility.
SIGNATURE The business owner, or officer of the company who is authorized to make decisions for the facility and who has operational control, shall sign in the space provided. The authorized signatory must be completed as specified in Title 22, CCR, Section 66270.11. In most companies, this is not the environmental compliance or technical staff. The title should indicate that an appropriate authorized person is signing for the company. Original signatures are required on all documents submitted.
 716. DATE CERTIFIED Enter the date that the document was signed
 717. OWNER/ OPERATOR NAME Enter the full printed name of the person signing the page.
 718. OWNER/ OPERATOR TITLE Enter the title of the person signing the page.

**UNIFIED PROGRAM (UP) FORM
 CERTIFICATION OF FINANCIAL ASSURANCE
 FOR PERMIT BY RULE AND CONDITIONALLY AUTHORIZED ONSITE TREATERS**

a. Initial Certification b. Amended Certification c. Annual Certification 700 Page ____ of ____

I. FACILITY IDENTIFICATION (Put an asterisk in the left margin next to the amended information)	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3	
FACILITY ID#	FACILITY EPA ID# 2

TYPE OF OPERATION a. PBR-FTU b. CA c. Other 701

II. ESTIMATED CLOSURE COSTS	
NOTE: In addition to the dollar figure below, a written estimate of closure costs must be attached when you submit this section of this page. 702	
ESTIMATED CLOSURE COSTS \$ _____	

III. EXEMPTION FROM FINANCIAL ASSURANCE REQUIREMENTS	
1. I am not required to provide a mechanism because:	
<input type="checkbox"/> a. I certify that my closure cost estimate is less than or equal to \$10,000, or	703
<input type="checkbox"/> b. Specify other reasons	704
<input type="checkbox"/> 2. As a PBR owner or operator, I have not operated more than thirty days in a calendar year. (Does not apply to Conditional Authorization)	705

IV. CLOSURE FINANCIAL ASSURANCE MECHANISM	
<input type="checkbox"/> I am required to provide a mechanism and it is attached to this page. 706	MECHANISM ID NUMBER(S): 708
EFFECTIVE DATE OF CLOSURE ASSURANCE MECHANISM _____ 707	

MECHANISM TYPE	<input type="checkbox"/> a. Closure Trust Fund	<input type="checkbox"/> d. Closure Insurance	<input type="checkbox"/> g. Multiple Financial Mechanisms	709
(Check one item only)	<input type="checkbox"/> b. Surety Bond	<input type="checkbox"/> e. Financial test and Corporate Guarantee	<input type="checkbox"/> h. Certificate of Deposit	
	<input type="checkbox"/> c. Closure Letter of Credit	<input type="checkbox"/> f. Alternative Mechanism	<input type="checkbox"/> i. Saving Account	

FINANCIAL INSTITUTION, INSURANCE OR SURETY COMPANY/ OTHER ORGANIZATION 710

ADDRESS 711

CITY 712	STATE 713	ZIP CODE 714
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V. OWNER OR OPERATOR CERTIFICATION

SIGNER OF THIS CERTIFICATION <input type="checkbox"/> a. Owner <input type="checkbox"/> b. Operator 715
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. (22 CCR Section 66270.11)

SIGNATURE OF OWNER/OPERATOR	DATE 716
NAME OF OWNER/OPERATOR (Print) 717	TITLE OF OWNER/OPERATOR 718

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT INSPECTOR

Remote Waste Consolidation Site Annual Notification

Complete this page if you are a generator:

1. and you collect non-RCRA hazardous waste, and/or,
2. the hazardous waste or its management at the consolidation site is otherwise exempt from, or is not otherwise regulated pursuant to, RCRA (the Federal Resource Conservation Recovery Act), and,
3. subsequently, the hazardous waste is transported to consolidation sites which you also operate.

Complete one Remote Waste Consolidation Site Annual Notification per consolidation site. All generators having the intent to operate under this exemption must notify the CUPA annually.

Refer to HSC §25110.10 for eligibility and notification requirements.

(Note: the numbering of the instructions follows the data element numbers that are on the UP Form pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or local agency identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.
2. EPA ID NUMBER - Enter the EPA ID number for the facility.
3. BUSINESS NAME - Enter the full legal name of the business.
720. NOTIFICATION STATUS - Check the reason the notification is being completed.
721. ADDRESS - Enter the street address of consolidation site. If no address exists, enter a legal description of the site.
722. CITY - Enter the city or unincorporated area of consolidation site.
723. ZIP CODE - Enter the zip code of the consolidation site.
724. DESCRIPTION OF REMOTE LOCATION(S) - Describe the type of location(s) and source(s) from which the non-RCRA hazardous waste will initially be collected (i.e. power pole).
725. DESCRIPTION OF WASTE(S) COLLECTED - Describe the specific waste type(s) to be consolidated. Attach a continuation sheet showing additional wastes, if necessary.
726. ONSITE HAZARDOUS WASTE TREATMENT - Check "Yes" if hazardous waste is treated at this consolidation site, check "No" if it is not.
727. ESTIMATED MONTHLY VOLUME CONSOLIDATED - Enter the estimated monthly total volume of hazardous waste to be consolidated at this site.
728. UNITS - Check the units for the volume consolidated.
729. BASIS FOR NOT NEEDING A FEDERAL PERMIT - Check the reason for not needing a federal permit for this site.
If the hazardous waste is RCRA hazardous waste, describe the reason you are not subject to permitting requirements under federal law in the space provided.

SIGNATURE - The business owner or officer of the company who is authorized to make decisions for the facility and who has operational control, shall sign in the space provided. In most companies, this is not the environmental compliance or technical staff. The title should indicate that an appropriately authorized person is signing for the company. You are signing the certifications and attesting to their accuracy under penalty of law for submitting false information. Original signatures are required.

730. DATE CERTIFIED - Enter the date that the document was signed.
731. OWNER/ OPERATOR NAME - Enter the full printed name of the person signing the page.
732. OWNER/ OPERATOR TITLE - Enter the title of the person signing the page.

Hazardous Waste Tank Closure Certification

Complete and submit this page prior to initiating any cleaning, cutting, dismantling, or excavation of a tank system that meets the conditions below:

- ◆ Any tank system that previously held a hazardous material or a hazardous waste, that is identified as a hazardous waste, and that is destined to be disposed, reclaimed or closed in place.
- ◆ This does not apply to tank systems regulated under a hazardous waste facility permit, other than permit by rule (PBR), or to tank systems regulated under a grant of interim status, nor to a tank system or any portion thereof, that meets the definition of scrap metal in 22 CCR §66260.10 and is excluded from regulation pursuant to 22 CCR §66261.6(a)(3)(B).

Refer to 22 CCR §67383.3 and 23 CCR §2672 for disposal requirements for tank systems.

(Note: the numbering of the instructions follows the data element numbers that are on the UP FORM pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.)

Please number all pages of your submittal. This helps your CUPA or local agency identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER - Leave this blank. This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME - Enter the full legal name of the business.

740. TANK OWNER NAME - Complete items 740-744, unless all items are the same as the Business Owner
741. TANK OWNER ADDRESS information (items 111-116) on the Business Owner/Operator Identification page
742. TANK OWNER CITY (OES Form 2730). If the same, write "SAME AS SITE" across this section
743. TANK OWNER STATE
744. TANK OWNER ZIP CODE

745. TANK ID NUMBER 1-3 - Enter up to three owner's tank ID numbers. This is a unique number used by the owner to identify the tank. If more than three tanks are being closed, complete additional copies of this page. (Enter additional tank numbers in 748 and 751.)

746. CONCENTRATION OF FLAMMABLE VAPOR 1-3 - Enter three interior flammable vapor levels for each tank being closed, taken at the top, center, and bottom of the tank. (For more than one tank, enter additional tank readings in 749 and 752.)

747. CONCENTRATION OF OXYGEN 1-3 - Enter three interior oxygen levels for each tank being closed, taken at the top, center, and bottom of the tank. (For more than one tank, enter additional tank readings in 750 and 753).

SIGNATURE - The business owner or officer of the company who is authorized to make decisions for the facility and who has operational control, shall sign in the space provided.

754. CERTIFIER NAME - Enter the full printed name of the person signing the page.

755. CERTIFIER TITLE - Enter the title of the person signing the page.

756. CERTIFIER ADDRESS - Enter the address of the person signing the page.

757. CERTIFIER CITY - Enter the city for the signer's address.

758. CERTIFIER PHONE - Enter the phone number for the person signing the page.

759. DATE CERTIFIED - Enter the date that the document was signed. Enter the time that the readings were taken.

760. CERTIFIER REPRESENTS LOCAL AGENCY - Check "Yes" if the person certifying the tank is a representative of the CUPA or PA, check "No" if not.

761. NAME OF LOCAL AGENCY - Enter the name of the local agency represented by the person certifying the tank.

762. AFFILIATION OF CERTIFYING PERSON - Check the certification, license, or organization which the certifier holds or to which the certifying person belongs, if not a CUPA/ PA.

763. TANK HELD FLAMMABLE OR COMBUSTIBLE MATERIALS - Check "Yes" if the tank held flammable or combustible materials, check "No" if not.

764. MANAGEMENT INSTRUCTIONS - Provide tank management instructions to the scrap dealer, disposal facility, etc., in this space.

UNIFIED PROGRAM (UP) FORM HAZARDOUS WASTE TANK CLOSURE CERTIFICATION

Page of

I. FACILITY IDENTIFICATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) ³	FACILITY ID#	1
TANK OWNER NAME 740		
TANK OWNER ADDRESS 741		
TANK OWNER CITY 742	STATE 743	ZIP CODE 744

II. TANK CLOSURE INFORMATION

TANK INTERIOR ATMOSPHERE READINGS	Tank ID # <small>(Attach additional copies of this page for more than three tanks)</small>	Concentration of Flammable Vapor			Concentration of Oxygen		
		Top	Center	Bottom	Top	Center	Bottom
1	745	746a	746b	746c	747a	747b	747c
2	748	749a	749b	749c	750a	750b	750c
3	751	752a	752b	752c	753a	753b	753c

III. CERTIFICATION

On examination of the tank, I certify the tank is visually free from product, sludge, scale (thin, flaky residual of tank contents), rinseate and debris. I further certify that the information provided herein is true and accurate to the best of my knowledge.

SIGNATURE OF CERTIFIER	STATUS OR AFFILIATION OF CERTIFYING PERSON 760
NAME OF CERTIFIER (Print) 754	Certifier is a representative of the CUPA or PA: <input type="checkbox"/> Yes <input type="checkbox"/> No 761
TITLE OF CERTIFIER 755	Name of CUPA or PA: _____ 762
ADDRESS 756	If certifier is other than CUPA / PA check appropriate box below:
CITY 757	<input type="checkbox"/> a. Certified Industrial Hygienist (CIH)
PHONE 758	<input type="checkbox"/> b. Certified Safety Professional (CSP)
DATE 759	<input type="checkbox"/> c. Certified Marine Chemist (CMC)
CERTIFICATION TIME	<input type="checkbox"/> d. Registered Environmental Health Specialist (REHS)
	<input type="checkbox"/> e. Professional Engineer (PE)
	<input type="checkbox"/> f. Class II Registered Environmental Assessor
	<input type="checkbox"/> g. Contractors' State License Board licensed contractor (with hazardous substance removal certification)

TANK PREVIOUSLY HELD FLAMMABLE OR COMBUSTIBLE MATERIALS 763
(If yes, the tank interior atmosphere shall be re-checked with a combustible gas indicator prior to work being conducted on the tank.) Yes No

CERTIFIER'S TANK MANAGEMENT INSTRUCTIONS FOR SCRAP DEALER, DISPOSAL FACILITY, ETC: 764

A copy of this certificate shall accompany the tank to the recycling / disposal facility. Also, provide copies to the CUPA, applicable Participating Agency (PA), owner / operator of the tank system, removal contractor, and the recycling / disposal facility.

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT
		INSPECTOR

HAZARDOUS WASTE GENERATOR PAGE (LA COUNTY)

The waste generator page is used to identify your generator status and all waste streams generated at your facility.

1. **FACILITY ID NUMBER** Leave this blank. The Certified Unified Program Agency (CUPA) assigns this number that identifies your facility.
2. **EPA ID #** If you generate, recycle, or treat hazardous waste, enter your facility's 12-character U.S. Environmental Protection Agency (U.S. EPA) or California Identification number. For facilities in California, the number usually starts with the letters "CA". If you do not have a number, contact the Department of Toxic Substances Control (DTSC) at (916) 324-1781, (800) 61-TOXIC or (800) 61-86942, to obtain one.
3. **BUSINESS NAME** Enter the full legal name of the business.
- 133b. **NUMBER OF EMPLOYEES** Enter the total number of employees currently working at your facility.
- A. **TYPE OF GENERATOR** Check the box that most closely apply to your facility. Check no more than one box per column.

RCRA GENERATOR Check the box that best describes the amount of Federal listed and regulated hazardous waste generated by your facility. Leave blank if your facility doesn't generate hazardous waste regulated under Subtitle C of RCRA (the Resource Conservation and Recovery Act of 1976).

NON - RCRA GENERATOR Check the box that that best describes the amount of California-only listed and regulated hazardous waste generated by your facility. Leave blank if your facility doesn't generate non-RCRA hazardous waste.

Boxes include:
 - ◆ Large Quantity Generator (greater than 1000 kg per Hazardous Waste per month)
 - ◆ Small Quantity Generator (less than 1000 kg per month but greater than 100 kg Hazardous Waste per month)
 - ◆ Conditionally Exempt Small Quantity Generator (less than 100 kg Hazardous Waste per month)

Note:

 1. 1 kg = 2.2 lbs.
 2. For Acutely Hazardous Waste or Extremely Hazardous Waste, facilities that generate greater than 1 kg per month are considered Large Quantity Generators and facilities that generate less are considered Conditionally Exempt Small Quantity Generators.
- B. **PROCESS** Briefly describe all processes that generate hazardous waste(s) at your facility. Example: plating, machining, painting, etc.
- C. **WASTE DESCRIPTION** Describe the type of waste that is generated from each process listed. Example: heavy metal sludge, waste oil, etc.
- D. **WASTE ID** List the Waste ID #'s for all RCRA and non-RCRA hazardous waste. Refer to 22 CCR § 66261.126.
- E. **AMOUNT PER YEAR** List the amount of hazardous waste generated from each separate process in kilograms, pounds, gallons, or tons per year.
- F. **STORAGE METHOD** Enter the letter that corresponds to the type of storage used at your facility for each of the hazardous waste streams listed.
 - A = Drums
 - B = Underground Tank
 - C = Aboveground Tank
 - D = Waste Pile
 - E = In Process Equipment
- G. **DISPOSAL METHOD** Enter the letter in the space provided to describe the disposal method used at your facility for each of the hazardous waste streams listed.
 - A = Treatment Onsite
 - B = Treatment Offsite
 - C = Recycle Onsite
 - D = Recycle Offsite
- H. **OWNER/OPERATOR NAME** Indicate the name of the person who signed the form.
- I. **OWNER/OPERATOR TITLE** Indicate the title of the person who signed the form.
- J. **DATE** Indicate the date the form was signed.

UNIFIED PROGRAM (UP) FORM HAZARDOUS WASTE GENERATOR

PAGE OF

BUSINESS NAME: 3

FACILITY ID # 1 NO. OF EMPLOYEES: 133b EPA ID # 2

I. TYPE OF GENERATOR

A

PLEASE CHECK THE FOLLOWING BOXES THAT APPLY (Check no more than one box per column)

	RCRA GENERATOR (FEDERAL WASTE)	NON -RCRA GENERATOR (CALIFORNIA WASTE ONLY)
LARGE QUANTITY GENERATOR (>1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
SMALL QUANTITY GENERATOR (>100 KG BUT <1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR (< 100 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>

II. WASTE STREAM IDENTIFICATION

PLEASE COMPLETE THE TABLE BELOW. SEE INSTRUCTIONS FOR CODES AND EXPLANATION.

PROCESS	WASTE DESCRIPTION	WASTE ID	AMOUNT PER YEAR	STORAGE METHOD	DISPOSAL METHOD

I certify that the information provided herein is true and accurate to the best of my knowledge.

OWNER/OPERATOR NAME	H	OWNER/OPERATOR TITLE	I
OWNER/OPERATOR SIGNATURE		DATE	J

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT INSPECTOR

4. **Unified Form (Short Form)– (Business Plan) –
Los Angeles County Fire Department – Health
HazMat**

THE CERTIFIED UNIFIED PROGRAM AGENCIES OF LOS ANGELES COUNTY

UNIFIED PROGRAM (UP) FORM



**CITY OF EL SEGUNDO
FIRE DEPARTMENT**



**COUNTY OF LOS ANGELES
FIRE DEPARTMENT**



**CITY OF GLENDALE
FIRE DEPARTMENT**



**CITY OF SANTA FE SPRINGS
FIRE DEPARTMENT**



CITY OF LONG BEACH



**CITY OF SANTA MONICA
FIRE DEPARTMENT**



**CITY OF LOS ANGELES
FIRE DEPARTMENT**



**CITY OF VERNON
HEALTH DEPARTMENT**

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Note: The UP form was developed by the CUPA's of Los Angeles County as an alternative version of the Unified Program Consolidated Form (UPCF). Businesses have the option to use it or the UPCF adopted in state regulation. The CUPA or Participating Agency (PA) must accept the state UPCF and cannot require a business to use the alternative version developed by the CUPA. The CUPA and PA can require businesses to provide additional information on either the UPCF or a supplemental page to that document. (Reference: 27 CCR Section 15400.3 (d))

WHAT IS A CUPA?

Senate Bill 1082, introduced by Senator Charles Calderon (D-Whittier) and passed in 1993, created the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program), which requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a Certified Unified Program Agency (CUPA). The Program Elements consolidated under the Unified Program are:

- ❖ Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs (a.k.a. Tiered Permitting);
- ❖ Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC);
- ❖ Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or "Community-Right-To-Know");
- ❖ California Accidental Release Prevention Program (Cal ARP);
- ❖ Underground Storage Tank Program (UST); and,
- ❖ Uniform Fire Code Plans and Inventory Requirements.

The goal of the Unified Program is to create a more cohesive, effective and efficient program. Under the Unified Program, application and required submission forms are standardized and consolidated, inspections are combined where possible, annual fees for each program element are merged into a single fee system, and enforcement procedures are made more consistent.

Local agencies administering one or more of the six Program Elements had the option to either apply for CUPA status with the California Environmental Protection Agency (Cal EPA) or retain their programs by becoming a Participating Agency (PA) under another CUPA's jurisdiction. Counties were required to apply for CUPA designation. Eight CUPAs in Los Angeles County received certification from Cal EPA to implement the CUPA program effective July 1, 1997 including the Cities of El Segundo, Glendale, Long Beach, Los Angeles, Santa Fe Springs, Santa Monica, and Vernon, and the County of Los Angeles (LA Co CUPA). The LA Co CUPA implements the Unified Program in all unincorporated and incorporated areas of the County **not** within the jurisdiction of the other seven CUPAs.

(Note: The Los Angeles County Fire Department administers Hazardous Waste Programs in the cities of Los Angeles and Santa Monica as a Participating Agency.)

Ten cities and two County agencies entered into agreements and/or Memorandum of Understanding with the Los Angeles County Fire Department to administer one or more of the Program Elements as Participating Agencies (PAs) to the LACoCUPA. The ten City agencies include the Fire Departments of Alhambra, Burbank, Compton, Culver City, Downey, Monrovia, Pasadena, Redondo Beach, South Pasadena, and Torrance. The two County Departments include the Department of Public Works and the Agricultural Commissioner.

OFFICES OF CUPAs IN LOS ANGELES COUNTY

El Segundo Fire Department 314 Main Street El Segundo, CA 90245 (310) 524-2242	Fire Department 333 Olympic Drive, 2 nd Floor Santa Monica, CA 90401 (310) 434-2666	North County 14425 Olive View Dr. Sylmar, CA 91342	(818) 364-7120
Glendale Fire Department 780 Flower Street Glendale, CA 91201 (818) 548-4030	Vernon Environmental Health 4305 Santa Fe Avenue Vernon, CA 90058 (323) 583-8811	East County 5110 North Peck Rd. El Monte, CA 91732	(626) 450-7450
Long Beach Health Department 2525 Grand Avenue Long Beach, CA 90815 (562) 570-4131	Los Angeles County Fire Department Health Haz Mat Division 5825 Rickenbacker Road Commerce, CA 90040 (323) 890-4045	Southeast County 9155 Telegraph Rd. Pico Rivera, CA 90660	(562) 654-2620
Los Angeles City Fire Department 200 N. Main Street, Room 1780 Los Angeles, CA 90012 (213) 978-3680	LA County Fire Department Offices: 5825 Rickenbacker Road Commerce, CA 90040	Southwest County 24330 Narbonne Ave. Lomita, CA 90717	(310) 534-6270
Santa Fe Springs Fire Department 11300 Greenstone Avenue Santa Fe Springs, CA 90670 (562) 944-9713 City of Santa Monica	Central District (323) 890-4107 Data Unit (323) 890-4000 Cal ARP Unit (323) 890-4035	West County 6167 Bristol Parkway, Suite 220 Culver City, CA 90230	(310) 348-1781

LOS ANGELES COUNTY CUPA - PARTICIPATING AGENCIES

ALHAMBRA FIRE DEPARTMENT

RAYMOND MOSACK Hazardous Materials Program
301 N. First Street Cal ARP Program
Alhambra, CA 91801
(626) 570-5192 / FAX (626) 457-8961
rmosack@alhambrafire.org

BURBANK FIRE DEPARTMENT

JORGE MARTINEZ Hazardous Materials Program
311 E. Orange Grove Ave Cal ARP Program
Burbank, CA 91502 UST Program
(818) 238-3384 / FAX (818) 238-3479
jmartinez@ci.burbank.ca.us

COMPTON FIRE DEPARTMENT

SHEILA HOPPER Hazardous Materials Program
201 S. Acacia Cal ARP Program
Compton, CA 90220
(310) 605-6294 / FAX (310) 632-8414
shopper@comptoncity.org

CULVER CITY FIRE DEPARTMENT

JESSE LUNA Hazardous Materials Program
9770 Culver Blvd Cal ARP Program
Culver City, CA 90232-0507
(310) 253-5930 / FAX (310) 253-5937
jesse.luna@culvercity.org

DOWNEY FIRE DEPARTMENT

LEE KIRBY Hazardous Materials Program
11111 Brookshire Avenue Cal ARP Program
Downey, CA 90241
(562) 904-7348 / FAX (562) 904-7270
lkirby@downeyca.org

MONROVIA FIRE DEPARTMENT

CHIEF SCOTT HABERLE Hazardous Materials Program
141 E. Lemon Avenue Cal ARP Program
Monrovia, CA 91016
(626)256-8110/ FAX (626) 256-8112
shaberle@ci.monrovia.ca.us

PASADENA FIRE DEPARTMENT

JAMES WECKERLE Hazardous Materials Program
199 S. Los Robles Av. #550 Cal ARP Program
Pasadena, CA 91101 UST Program
(626) 744-4288 / FAX (626) 585-9164
jweckerle@ci.pasadena.ca.us

REDONDO BEACH FIRE DEPARTMENT

RICK KUCIEMBA Hazardous Materials Program
401 S. Broadway Cal ARP Program
Redondo Beach, CA 90277
(310) 318-0663 Ext. 4395 / FAX (310) 376-3402
richard.kuciemba@redondo.org

TORRANCE FIRE DEPARTMENT

JOHN KULLUK Hazardous Materials Program
3031 Torrance Blvd. Cal ARP Program
Torrance, CA 90503 UST Program
(310) 618-2973 / FAX (310) 781-7506
jkulluk@torranceca.gov.

COUNTY OF LOS ANGELES

AGRICULTURAL COMMISSIONER/

WEIGHTS & MEASURES Hazardous Materials Program
ARIEL VERAYO
12300 Lower Azusa Rd.
Arcadia, CA 91006
(626) 459-8894 / FAX (626) 443-6652
Averayo@acwm.lacounty.gov

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS, ENVIRONMENTAL MANAGEMENT DIVISION

TIM SMITH UST Program
900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3511 / FAX (626) 458-3569
tsmith@dpw.lacounty.gov

NOTE: The LA Co CUPA implements the Unified Program in all unincorporated and incorporated areas of the County **not** within the jurisdiction of the seven City CUPAs. Each Participating Agency of the LA Co CUPA regulates the program listed in their jurisdictions. The Los Angeles County Department of Public Works administers the UST program in all areas of the LA County CUPA except for the cities of Burbank, Pasadena, and Torrance where the City Fire Department administers the UST program. The County of Los Angeles Agricultural Commissioner administers the Hazardous Materials program for agricultural business (farms and nurseries).

REPORTING POLICY

1. Please, use the CUPAs of Los Angeles County Unified Program (UP) Form provided. Only information submitted on the CUPAs of Los Angeles County or State forms will be accepted.

Note: If the State of California UPCF Form is used, we may request your business provide additional locally collected information.

For your convenience: The Full and Short Version of the THE CUPAs OF LOS ANGELES COUNTY UNIFIED PROGRAM (UP) FORM and individual pages of the form are available for download at the Los Angeles County Fire Department 's web site: <http://fire.lacounty.gov/HealthHazMat/HHMDForms.asp>

2. All forms may be photocopied if necessary.
3. Appropriate forms must bear an original signature(s).
4. Keep copies of your submitted documents for your records as proof of submission.
5. Please, do not enclose any payments with your forms. The Financial Management Division of your CUPA will bill you.
6. It is recommended that forms be sent via "Certified Mail" to ensure delivery by "Return Receipt."
7. Submit all completed forms to:

Los Angeles County Fire Department
Health Hazardous Materials Division
5825 Rickenbacker Road
Commerce, CA 90040
Attn: Data Operations

8. If you have any questions or need assistance, contact your City or County CUPA or PA during office hours.
9. Be advised that failure to submit required forms may result in fines, penalties and/or other administrative fees.

WHAT DO I REPORT?

Enclosed is the **CUPAs of Los Angeles County Unified Program (UP) Form** for hazardous materials programs. This form includes instructions and requirements described in the California Health and Safety Code, Uniform Fire Code, and State regulations. Your business is required to complete and submit the **Business Activities Page** and a **Business Owner/Operator Identification Page**. In addition, your business is required to complete and submit reporting forms for any of the following programs that apply to your facility:

Hazardous Materials Disclosure

Any business, which handles the minimum amount of 55 gallons or 500 pounds of a hazardous material or 200 cubic feet of a compressed gas, at any one time during the reporting year, is considered a handler of hazardous materials. A hazardous material handling business is required to submit the **Chemical Description** page(s), Section I of the **Consolidated Contingency Plan**, and a **Site Map(s)** to the CUPA.

(Note: Under local ordinances, some agencies have hazardous materials reporting thresholds lower than State reporting thresholds. Contact your local CUPA or PA for additional information.)

California Accidental Release Prevention Program (Cal ARP)

Any business, which handles Regulated Substances (including Federally listed Extremely Hazardous Substances and State listed Acutely Hazardous Materials), is required to submit a **Regulated Substance Registration** to the CUPA. The list of Regulated Substances is included in this form packet.

Underground Storage Tank (UST) Program

Any business, which has underground storage tanks to store hazardous materials, including gasoline, is required to complete and submit a **UST Facility** page and **UST Tank** page for each tank to the CUPA. New USTs must complete and submit a **UST Installation - Certificate of Compliance** page. Also, businesses must complete and submit Section II of the **Consolidated Contingency Plan** and a **plot plan (with location of UST system(s))** to the CUPA.

Aboveground Petroleum Storage Tanks (APST)

Any business, which stores petroleum oil in aboveground storage tanks with a total capacity for the facility greater than 1320 gallons, is required to complete a **Spill Prevention Countermeasure Control (SPCC) Plan** and to include the following information in the business plan: (1) facility name, address, and owner or operator; (2) total storage capacity, and (3) the location, size, age, and contents of each storage tank that exceeds 10,000 gallons of petroleum oil.

Hazardous Waste Generator

Any business, which generates any quantity of a hazardous waste, is a hazardous waste generator. Hazardous wastes are any chemical wastes which are toxic, corrosive, reactive, or ignitable, as defined in State law, including waste oil, waste coolant, waste parts cleaner, waste photo developer, waste printing inks, waste dry cleaning solvent, waste paint and spray booth filters. Generators are required to submit a **Waste Generator** Form to the CUPA.

Hazardous waste generating businesses, which conduct onsite hazardous waste treatments authorized under Permit-By-Rule (PBR), Conditional Authorization (CA) and Conditional Exemption (CE) tiers, are required to complete and submit **Onsite Hazardous Waste Treatment Notification - Facility, Onsite Hazardous Waste Treatment Notification - Unit, Certificate of Financial Assurance** pages, and other attachments to the CUPA (see UP Form – Full Version for forms).

Businesses, which claim a recycling exclusion or exemption (per Health and Safety Code Section 25143.2) for a material or process from the hazardous waste generator or tiered permitting programs, must complete and submit the **Recyclable Materials Biennial Report** to the CUPA (see UP Form – Full Version for form).

Hazardous waste generators, which collect non-RCRA hazardous waste or conduct hazardous waste activities exempt from RCRA at remote sites, and subsequently transport the hazardous waste to consolidation sites operated by the generator, must complete and submit a **Remote Waste Consolidation Site Annual Report** page to the CUPA (see UP Form – Full Version for form).

Businesses closing Hazardous Waste tanks must complete and submit a **Hazardous Waste Tank Closure Certification** page to the CUPA (see UP Form – Full Version for form).

BASIC INSTRUCTIONS

Your business is required to complete and submit to your local CUPA only the forms which are applicable to your facility's activities. First, complete the Business Activities Page to determine which forms that you are required to complete and submit to the CUPA. If you answer yes to any question on the Business Activities Page, complete the Business Owner/Operator Identification Page and all applicable program forms.

Important! We have provided instructions with each form in this package. Please, do not hesitate to contact your CUPA or PA if you have questions about the forms and program reporting requirements. It is only necessary to send the CUPA one copy of this form package. Forms for programs under a Participating Agency jurisdiction, such as the UST program or Hazardous Waste Generator program, will be forwarded by the CUPA to the PA.

SHORT FORM ORGANIZATION

The short version of the Unified Program Form (UP FORM) is organized as follows:

I. FACILITY INFORMATION SECTION

- a. Business Activities Page
- b. Business Owner/Operator Identification Page
- c. Consolidated Contingency Plan

II. HAZARDOUS MATERIALS

- a. Hazardous Materials Inventory-Chemical Description
- b. Cal ARP- Regulated Substance Registration

III. HAZARDOUS WASTE

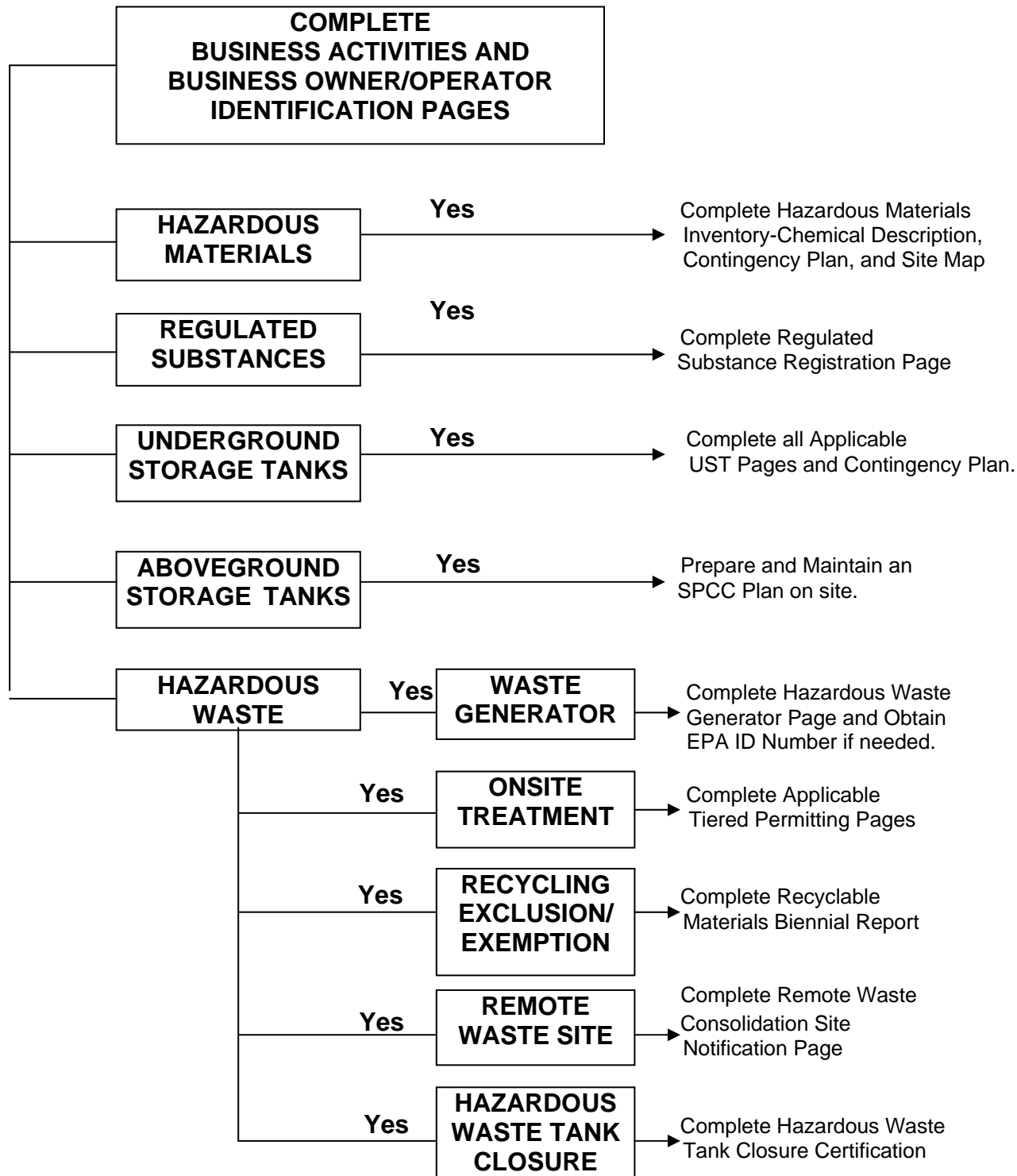
- a. Hazardous Waste Generator Page

BE ADVISED THAT THE SHORT VERSION OF THE UP FORM IS ONLY TO BE USED BY BUSINESSES WHICH HANDLE HAZARDOUS MATERIALS AND/OR GENERATE HAZARDOUS WASTE. *

BUSINESSES THAT CONDUCT OTHER ACTIVITIES AT THEIR FACILITIES MUST USE THE FULL VERSION OF THE UP FORM.

* HAZARDOUS WASTE GENERATORS THAT CONDUCT ONSITE HAZARDOUS WASTE TREATMENT, CLAIM A RECYCLING EXCLUSION OR EXEMPTION, CONSOLIDATE HAZARDOUS WASTE AT A REMOTE SITE, OR CLOSE A HAZARDOUS WASTE TANK MUST USE THE FULL VERSION OF THE UP FORM.

UNIFIED PROGRAM FORM FLOW CHART



I. FACILITY INFORMATION SECTION

To be completed by all businesses, regardless of program type.

Be advised that appropriate signatures must be provided on forms.

This section includes:

- o BUSINESS ACTIVITIES PAGE

Please complete this form first. This will help you to determine which other forms you are required to complete.

- o BUSINESS OWNER/OPERATOR IDENTIFICATION PAGE

All sections must be completed, including primary and secondary emergency contacts.

- o CONSOLIDATED CONTINGENCY PLAN

All regulated businesses must complete the Cover Page, Section I (Business Plan and Contingency Plan), and a Site Map.

Business Activities

Please submit the Business Activities page, the Business Owner/Operator Identification page (Form 2730), and Hazardous Materials Inventory - Chemical Description pages (Form 2731) for all submissions. Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER Leave this blank. This number is assigned by the Certified Unified Program Agency (CUPA) and identifies your facility.
2. EPA ID NUMBER If you generate, recycle, or treat hazardous waste, enter your facility's 12-character U.S. Environmental Protection Agency (U.S. EPA) or California Identification number. For facilities in California, the number usually starts with the letters "CA". If you need a CA EPA number, complete and submit DTSC Form 1358 located at http://www.dtsc.ca.gov/IDManifest/ID_Numbers.cfm to the Department of Toxic Substances Control (DTSC), or if you need a federal EPA number, call (415) 495-8895 <http://www.epa.gov/region09/waste/epanums.html#rcranum>
3. BUSINESS NAME Enter the full legal name of the business. This is the same as the terms "Facility Name" or "DBA - Doing Business As".
- 3a. BUSINESS SITE ADDRESS- Enter the street address where the facility is located. No post office box numbers are allowed. This information must provide a means to geographically locate the facility.
4. HAZARDOUS MATERIALS ONSITE Check the box to indicate whether you have hazardous materials onsite. You have a hazardous material if:
 - It is handled in quantities equal to or greater than 500 pounds, 55 gallons, or 200 cubic feet of gas (calculated at standard temperature and pressure),
 - It is handled in quantities equal to or greater than the applicable federal threshold planning quantity for an extremely hazardous substance listed in 40 CFR Part 355, Appendix A,
 - Radioactive materials are handled in quantities for which an emergency plan is required to be adopted pursuant to Part 30, Part 40, or Part 70 of Chapter 10 of 10 CFR, or pursuant to any regulations adopted by the state in accordance with these regulations.If you have hazardous materials onsite, then you must complete the Business Owner/Operator Identification page (OES Form 2730) and the Hazardous Materials Inventory - Chemical Description page (OES Form 2731), as well as an Emergency Response Plan (i.e. Consolidated Contingency Plan) and Training Plan. Do not answer "YES" to this question if you exceed only a local threshold, but do not exceed the state threshold.
4. OWN OR OPERATE UNDERGROUND STORAGE TANK (UST) Check the appropriate box to indicate whether you own or operate USTs containing hazardous substances as defined in Health and Safety Code (HSC) §25316. If "YES", then you must complete one UST Facility page and UST Tank pages for each tank. **You must also submit a plot plan and a monitoring program plan.**
5. UPGRADE/INSTALL UST Check the appropriate box to indicate whether you intend to install or upgrade USTs containing hazardous substances as defined in HSC §25316. If "YES", then you must complete the UST Installation - Certificate of Compliance page in addition to UST Facility and Tank pages, plot plan and monitoring program plan.
6. UST CLOSURE Check the appropriate box if you are closing an UST and complete the closure portion of the UST Tank pages for each tank.
7. OWN OR OPERATE ABOVEGROUND PETROLEUM STORAGE TANK (APST) To calculate the storage capacity of petroleum oil, add the volume capacities of all containers and tanks that store 55 gallons or more of petroleum oil in your calculation. Do not include underground storage tanks. In the H&SC, Section 25270.2 (g) defines petroleum oil and Section 25270.2 (a)(4) lists the types of petroleum oil that are exempt. Until the CUPA provides a tank facility statement, document your consolidated contingency plan with the following tank information: (1) facility name, address, and owner or operator; (2) total storage capacity, and (3) the location, size, age, and contents of each storage tank that exceeds 10,000 gallons of petroleum oil. If you have 1,320 gallons or more of petroleum oil, prepare a spill prevention control and countermeasure plan.
8. HAZARDOUS WASTE GENERATOR Check the appropriate box to indicate whether your facility generates hazardous waste. A generator is the person or business whose acts or processes produce a hazardous waste or who causes a hazardous substance or waste to become subject to State hazardous waste law. If your facility generates hazardous waste, you must obtain and use an EPA Identification number (ID) in order to properly transport and dispose of it. Report your EPA ID number in #2. Hazardous waste means a waste that meets any of the criteria for the identification of a hazardous waste adopted by DTSC pursuant to HSC §25141. "Hazardous waste" includes, but is not limited to, federally regulated hazardous waste. Federal hazardous waste law is known as the Resource Conservation and Recovery Act (RCRA). Unless explicitly stated otherwise, "hazardous waste" also includes extremely hazardous waste and acutely hazardous waste.
9. RECYCLE Check the appropriate box to indicate whether your facility recycles more than 100 kilograms per month of recyclable material under a claim that the material is excluded or exempt per HSC §25143.2. Check "YES" and complete the Recyclable Materials Report pages, if you either recycled onsite or recycled excluded recyclable materials which were generated offsite. Check "NO" if you only send recyclable materials to an offsite recycler; you do not need to report.
10. ONSITE HAZARDOUS WASTE TREATMENT Check the appropriate box to indicate whether your facility treats hazardous waste onsite. "Treatment" means any method, technique, or process which is designed to change the physical, chemical, or biological character or composition of any hazardous waste or any material contained therein, or removes or reduces its harmful properties or characteristics for any purpose. "Treatment" does not include the removal of residues from manufacturing process equipment for the purposes of cleaning that equipment. Amendments (effective 1/1/99) add exemptions from the definition of "treatment" for certain processes under specific, limited conditions. Refer to HSC §25123.5 (b) for these specific exemptions. Treatment of certain laboratory hazardous wastes do not require authorization. Refer to HSC §25200.3.1 for specific information. Please contact your CUPA to determine if any exemptions apply to your facility. If your facility treats hazardous waste onsite, complete the Onsite Hazardous Waste Treatment Notification - Facility page and one set of Onsite Hazardous Waste Treatment Notification - Unit pages for each unit.
11. FINANCIAL ASSURANCE Check the appropriate box to indicate whether your facility is subject to financial assurance requirements for closure of an onsite treatment unit. Unless they are exempt, Permit by Rule (PBR) and Conditionally Authorized (CA) operations are required to provide financial assurance for closure costs (per 22 CCR §67450.13 (b) and HSC §25245.4). If your facility is subject to financial assurance requirements or claiming an exemption, then complete the Certification of Financial Assurance page.
12. REMOTE WASTE CONSOLIDATION SITE Check the appropriate box to indicate whether your facility consolidates hazardous waste generated at a remote site. Answer "YES" if you are a hazardous waste generator that collects hazardous waste at remote sites and transports the hazardous waste to a consolidation site you also operate. You must be eligible pursuant to the conditions in HSC §25110.10. If your facility consolidates hazardous waste generated at a remote site, then complete the Remote Waste Consolidation Site Annual Notification page.
13. HAZARDOUS WASTE TANK CLOSURE Check the appropriate box to indicate whether the tank being closed would be classified as hazardous waste after its contents are removed. Classification could be based on your knowledge of the tank and its contents, the mixture rule, testing of the tank, the listed wastes in 40 CFR 261.31 or 40 CFR 261.32, or inability to remove hazardous materials stored in the tank. If the closed tank would be classified as hazardous waste, then complete the Hazardous Waste Tank Closure Certification page.
- 14a. RCRA LQG- Check the appropriate box to indicate whether your facility is a Large Quantity Generator. If YES, you must have or obtain a US EPA ID Number.
- 14b. HOUSEHOLD HAZARDOUS WASTE COLLECTION- Check the appropriate box to indicate whether your facility is a HHW Collection site.
15. LOCAL REQUIREMENTS- Some CUPAs or AAs may require additional information. Check with your CUPA before submitting the UPCF.
- 15a. LOCAL REQUIRED INFORMATION: REGULATED SUBSTANCES (RS) Check the box to indicate whether Regulated Substances (RS) are stored onsite. An RS is any substance, listed in CCR, Title 19, Section 2770.5. See attached Regulated Substance list. If you handle an RS at greater than the threshold planning quantities then complete the Regulated Substance Registration in addition to forms required under item number 4.
- 15b. LOCAL HAZARDOUS MATERIALS THRESHOLD Check the appropriate box to indicate if you are subject to reporting hazardous materials at a level established by your local CUPA or PA. Check with your local CUPA or PA for details.

UNIFIED PROGRAM (UP) FORM BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID #		1	EPA ID # (Hazardous Waste Only)	2
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)				3
BUSINESS SITE ADDRESS				3a

II. ACTIVITIES DECLARATION

**NOTE: If you check YES to any part of this list,
please submit the Business Owner/Operator Identification page.**

Does your facility...	If Yes, please complete these pages of the UP FORM....	
A. HAZARDOUS MATERIALS		
Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	<input type="checkbox"/> YES <input type="checkbox"/> NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION CONSOLIDATED CONTINGENCY PLAN (Section I and Site Map(s)) TRAINING PLAN
B. UNDERGROUND STORAGE TANKS (USTs)		
1. Own or operate underground storage tanks?	<input type="checkbox"/> YES <input type="checkbox"/> NO 5	UST FACILITY UST TANK (one page per tank)
2. Intend to upgrade existing or install new USTs?	<input type="checkbox"/> YES <input type="checkbox"/> NO 6	UST FACILITY UST TANK (one per tank) UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank)
3. Need to report closing a UST?	<input type="checkbox"/> YES <input type="checkbox"/> NO 7	UST TANK (closure portion –one page per tank)
C. ABOVE GROUND PETROLEUM STORAGE TANKS (APSTs)		
Petroleum oil is stored in any container or tank that has a storage capacity of 55 gallons or more. The aggregate capacity of petroleum oil in all tanks and containers is greater than 1,320 gallons.	<input type="checkbox"/> YES <input type="checkbox"/> NO 8	CONSOLIDATED CONTINGENCY PLAN (Section I and Site Map(s))
D. HAZARDOUS WASTE		
1. Generate hazardous waste?	<input type="checkbox"/> YES <input type="checkbox"/> NO 9	EPA ID NUMBER – provide at the top of this page. As a generator, answer YES to Item E2b and complete Waste Generator Form.
2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	<input type="checkbox"/> YES <input type="checkbox"/> NO 10	RECYCLABLE MATERIALS REPORT
3. Treat hazardous waste on site?	<input type="checkbox"/> YES <input type="checkbox"/> NO 11	ONSITE HAZARDOUS WASTE TREATMENT – FACILITY ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
4. Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	<input type="checkbox"/> YES <input type="checkbox"/> NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
5. Consolidate hazardous waste generated at a remote site?	<input type="checkbox"/> YES <input type="checkbox"/> NO 13	REMOTE WASTE / CONSOLIDATION
6. Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	<input type="checkbox"/> YES <input type="checkbox"/> NO 14	SITE ANNUAL NOTIFICATION HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
7. Generate in any single calendar month 1,000 kilograms (kg) (2,000 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	<input type="checkbox"/> YES <input type="checkbox"/> NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B) and satisfy requirements for RCRA Large Quantity Generator.
8. Household Hazardous Waste (HHW) Collection site	<input type="checkbox"/> YES <input type="checkbox"/> NO 14b	See CUPA for required forms.
E. LOCAL REQUIREMENTS		
1. REGULATED SUBSTANCES		
Have Regulated Substances (RS) including Extremely Hazardous Substances (EHS) stored on site at greater than the threshold planning quantities established by the California Accidental Release Program (Cal ARP) ?	<input type="checkbox"/> YES <input type="checkbox"/> NO 15a	In addition to Hazardous Materials requirements, complete: Regulated Substance Registration Risk Management Plan (when required)
2. Have hazardous materials on site at or above threshold amount established by CUPA or PA local ordinance?	<input type="checkbox"/> YES <input type="checkbox"/> NO 15b	Consult local CUPA or PA for added reporting requirements.

Business Owner/Operator Identification (LACoCUPA Form 2730)

Please submit the Business Activities page, the Business Owner/Operator Identification page (Form 2730), and Hazardous Materials - Chemical Description pages (Form 2731) for all hazardous materials inventory submissions. For the inventory to be considered complete, this page must be signed by the appropriate individual. Please number all pages of your submittal. This helps your CUPA or PA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME Enter the full legal name of the business.
100. BEGINNING DATE Enter the beginning year and date of the report. (YYYY/MM/DD, ex. 1999/07/01)
101. ENDING DATE Enter the ending year and date of the report. (YYYY/MM/DD, ex. 2000/06/30)
102. BUSINESS PHONE Enter the phone number, area code first, and any extension.
103. BUSINESS SITE ADDRESS Enter the street address where the facility is located. No post office box numbers are allowed.
104. CITY Enter the city or unincorporated area in which the business site is located.
105. ZIP CODE - Enter the zip code of the business site. The extra 4 digits in the zip code may also be added.
106. DUN & BRADSTREET Enter the Dun and Bradstreet number for the facility. The Dun & Bradstreet number may be obtained by calling (610) 882-7748 or by visiting Dun and Bradstreet on the internet at www.dnb.com.
107. SIC CODE Enter the primary Standard Industrial Classification Code number for primary business activity. Report only the first four digits.
108. COUNTY Enter the county in which the business site is located.
109. BUSINESS OPERATOR NAME Enter the name of the business operator.
110. BUSINESS OPERATOR PHONE Enter business operator's phone number including any extension, if different from the business phone.
111. OWNER NAME Enter name of the business owner, if different from the business operator.
112. OWNER PHONE Enter the business owner's phone number if different from the business phone, area code first, and any extension.
113. OWNER MAILING ADDRESS Enter the owner's mailing address if different from the business site address.
114. OWNER CITY Enter the name of the city for the owner's mailing address.
115. OWNER STATE Enter the 2 character state abbreviation for the owner's mailing address.
116. OWNER ZIP CODE Enter the zip code for the owner's address. The extra 4 digits in the zip code may also be added.
117. ENVIRONMENTAL CONTACT NAME Enter the name of the person, if different from the Business Owner or Operator, who receives all environmental correspondence and will respond to enforcement activity.
118. CONTACT PHONE Enter the phone number at which the environmental contact can be contacted including any extension.
119. CONTACT MAILING ADDRESS Enter the mailing address where all environmental contact correspondence should be sent.
120. CITY Enter the name of the city for the environmental contact's mailing address.
121. STATE Enter the 2 character state abbreviation for the environmental contact's mailing address.
122. ZIP CODE Enter the zip code for the environmental contact's mailing address. The extra 4 digits in the zip code may also be added.
123. PRIMARY EMERGENCY CONTACT NAME Enter the name of a representative that can be contacted in case of an emergency involving hazardous materials at the business site. The contact shall have FULL facility access, site familiarity, and authority to make decisions for the business regarding incident mitigation.
124. TITLE Enter the title of the primary emergency contact.
125. BUSINESS PHONE Enter the business number for the primary emergency contact, area code first, and any extensions.
126. 24-HOUR PHONE Enter a 24-hour phone number for the primary emergency contact. The 24-hour phone number must be one answered 24 hours a day. If it is not the contact's home phone number, then the service answering the phone must be able to immediately contact the individual stated above.
127. PAGER NUMBER Enter the pager number for the primary emergency contact, if available.
128. SECONDARY EMERGENCY CONTACT NAME Enter the name of a secondary representative that can be contacted in the event that the primary emergency contact is not available. The contact shall have FULL facility access, site familiarity, and authority to make decisions for the business regarding incident mitigation.
129. TITLE Enter the title of the secondary emergency contact.
130. BUSINESS PHONE Enter the business telephone number for the secondary emergency contact, area code first, and any extension.
131. 24-HOUR PHONE Enter a 24-hour phone number for the secondary emergency contact. The 24 hour phone number must be one which is answered 24 hours a day. If it is not the contact's home phone number, then the service answering the phone must be able to immediately contact the individual stated above.
132. PAGER NUMBER Enter the pager number for the secondary emergency contact, if available.
- 133a. UNINCORPORATED AREA Check "Yes" if your facility is located in an unincorporated area of the County (ex. East LA, Marina Del Rey etc.).
- 133b. E-MAIL ADDRESS Enter the e-mail address of the corresponding primary or secondary emergency contact if an e-mail address exists.
- 133c. LOCALLY COLLECTED INFORMATION Enter your business's tax identification number or social security number. The TIN number may be obtained from the Internal Revenue Service (IRS). Also, include the business owner's/president's name, position in the business, date of birth and driver's license number with the State issued in abbreviation.
- 133d. Number of Employees for facility: For Retail and service type businesses; the number of employees is determined by the actual number of employees directly related to the hazardous waste generating activity (s). For manufacturing type businesses; the total number of employees in the business shall be used for determining the hazardous waste licensing fee.
- 133e. Businesses will be identified by the following twelve codes: 01)-Corporation, 02)-Individual Owner, 03)-Partnership, 04)-Local Government Agency, 05)-County Government Agency, 06)-State Government Agency, 07)-Federal Government Agency, 08)-LA County Fire Department Facilities, 09)-Unknown Classification (Other), 10)-City Fire Facilities, 11)-LA County Sheriff Facilities, 12)-Other Police Facilities.
- 133f. MAILING/BILLING ADDRESS Enter the address that all correspondence and bills should be sent.
- 133g. MAILING/BILLING CITY Enter the city for the mailing/billing address.
- 133h. MAILING/BILLING STATE Enter the 2 character state abbreviation for the mailing/billing address.
- 133i. MAILING/BILLING ZIP CODE Enter the zip code for the mailing/billing address. The extra 4 digits in the zip code may also be added.
134. DATE Enter the date that the document was signed. (YYYYMMDD, ex. 1999/07/01)
135. NAME OF DOCUMENT PREPARER Enter the full name of the person who prepared the inventory submittal information.
136. NAME OF SIGNER Enter the full printed name of the person signing the page.
SIGNATURE OF OWNER/ OPERATOR OR DESIGNATED REPRESENTATIVE The Business Owner/Operator, or officially designated representative of the Owner/Operator, shall sign in the space provided. This signature certifies the signer is familiar with the information submitted, and based on the signer's inquiry of those individuals responsible for obtaining the information, it is the signer's belief that the information is true, accurate and complete.
137. TITLE OF SIGNER Enter the title of the person signing the page.

UNIFIED PROGRAM (UP) FORM
BUSINESS OWNER/OPERATOR IDENTIFICATION (LACoCUPA Form 2730)

NEW BUSINESS OUT OF BUSINESS REVISE/UPDATE (EFFECTIVE: / /)

PAGE OF

I. IDENTIFICATION

FACILITY ID#	1	BEGINNING DATE	100	ENDING DATE	101	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)			3	BUSINESS PHONE		102
BUSINESS SITE ADDRESS						103
CITY	104	C	ZIP CODE		105	
DUN & BRADSTREET	106	SIC CODE (4 digit #)		107		
COUNTY	108	UNINCORPORATED <input type="checkbox"/> Yes <input type="checkbox"/> No		133a.		
BUSINESS OPERATOR NAME			109	BUSINESS OPERATOR PHONE		110

II. BUSINESS OWNER

OWNER NAME	111	OWNER PHONE		112	
OWNER MAILING ADDRESS					113
CITY	114	STATE	115	ZIP CODE	116

III. ENVIRONMENTAL CONTACT

CONTACT NAME	117	CONTACT PHONE		118	
CONTACT MAILING ADDRESS					119
CITY	120	STATE	121	ZIP CODE	122

IV. EMERGENCY CONTACTS

PRIMARY		SECONDARY	
NAME	123	NAME	128
TITLE	124	TITLE	129
BUSINESS PHONE	125	BUSINESS PHONE	130
24-HOUR PHONE	126	24-HOUR PHONE	131
PAGER #	127	PAGER #	132
E-MAIL ADDRESS (if any)	133b	E-MAIL ADDRESS (if any)	133b

V. ADDITIONAL LOCALLY COLLECTED INFORMATION

FEDERAL TAX IDENTIFICATION NUMBER	133c	NO. OF EMPLOYEES	133d
NAME, POSITION, AND DATE OF BIRTH		BUSINESS CODE	133e
DRIVER'S LICENSE NUMBER AND STATE			

MAILING/ BILLING INFORMATION

ADDRESS	133f	CITY	133g	STATE	133h	ZIP CODE	133i
---------	------	------	------	-------	------	----------	------

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE	134	NAME OF DOCUMENT PREPARER	135	
NAME OF SIGNER (print)	136	TITLE OF SIGNER			137

OFFICIAL USE ONLY	UP Form	HW	HM	ARP	APST	UST	TP	CUPA	PA
INSPECTOR	DISTRICT	DATE OF INSP.	DIVISION	BATTALION	STATION				

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**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

COVER PAGE

FACILITY IDENTIFICATION			
BUSINESS NAME	3	FACILITY ID # 1	
SITE ADDRESS	103	CITY	104
		ZIP CODE	105

The Consolidated Contingency Plan provides businesses a format to comply with the emergency planning requirements of the following three written hazardous materials emergency response plans required in California:

- ⊖ Hazardous Materials Business Plan (HSC Chapter 6.95 Section 25504 (b) and 19 CCR Sections 2729-2732),
- ⊖ Hazardous Waste Generator Contingency Plan (22 CCR Section 66264.52), and,
- ⊖ Underground Storage Tank Emergency Response Plan and Monitoring Program (23 CCR Sections 2632 and 2641).

This format is designed to reduce duplication in the preparation and use of emergency response plans at the same facility, and to improve the coordination between facility response personnel and local, state and federal emergency responders during an emergency. Use the chart below to determine which sections of the Consolidated Contingency Plan need to be completed for your facility. If you are unsure as to which programs your facility is subject to, refer to the Business Activities Page.

PROGRAMS	SECTION(S) TO BE COMPLETED
Hazardous Materials Business Plan (HMBP)	Cover Page, Section I, and Site Map(s)
Hazardous Waste Generator (HWG)	Cover Page, Section I, and Site Map(s)
Underground Storage Tank (UST)	Cover Page, Sections I and II, and Site Map(s)
HMBP, HWG, UST	Cover Page, Sections I and II, and Site Map(s)

A copy of the plan shall be submitted to your local CUPA and at least one copy of the plan shall be maintained at the facility for use in the event of an emergency and for inspection by the local agency. Describe below where a copy of your Contingency Plan, including the hazardous material inventories and Site Map(s), is located at your business:

PLAN CERTIFICATION

I certify under penalty of law that I have personally examined and I am familiar with the information provided by this plan and to the best of my knowledge the information is accurate, complete, and true.

Printed Name of Owner/ Operator	Title of Owner/Operator
Signature of Owner/ Operator	Date

We appreciate the effort of local businesses in completing these plans and will assist in every possible way. If you have any questions, please contact your local CUPA or PA.

OFFICIAL USE ONLY		DATE RECEIVED			REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA	

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

ADVISORY

The site-specific Contingency Plan is the facility's plan for dealing with emergencies and shall be implemented immediately whenever there is a fire, explosion, or release of hazardous materials that could threaten human health and/or the environment. The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

- ⊖ the plan fails in an emergency,
- ⊖ the facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency,
- ⊖ the list of emergency coordinators changes, or
- ⊖ the list of emergency equipment changes.

Submit a copy of any updates or changes to your local CUPA or PA.

UST owners/operators be advised that the local UST agency, CUPA or PA, must be notified within 30 days of any changes to the monitoring procedures listed in the UST Emergency Response and Monitoring Plan as found Section II of the Consolidated Contingency Plan in the full version of the Unified Program Forms.

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

I. FACILITY IDENTIFICATION			
BUSINESS NAME	3	FACILITY ID # 1	
SITE ADDRESS	103	CITY	104
			ZIP CODE 105
II. EMERGENCY CONTACTS			
PRIMARY		SECONDARY	
NAME	123	NAME	128
TITLE	124	TITLE	129
BUSINESS PHONE	125	BUSINESS PHONE	130
24-HOUR PHONE	126	24-HOUR PHONE	131
PAGER #	127	PAGER #	132
III. EMERGENCY RESPONSE PLANS AND PROCEDURES			
A. Notifications			
Your business is required by State Law to provide an immediate verbal report of any release or threatened release of a hazardous material to local fire emergency response personnel, this Unified Program Agency (CUPA or PA), and the California Emergency Management Agency (Cal-EMA). If you have a release or threatened release of hazardous materials, immediately call:			
FIRE/PARAMEDICS/POLICE/SHERIFF PHONE: 911			
AFTER the local emergency response personnel are notified, you shall then notify this Unified Program Agency and Cal-EMA.			
Local Unified Program Agency:	(323) 890-4317		
Cal-EMA:	(800) 852-7550		
National Response Center:	(800) 424-8802		
Information to be provided during Notification:			
⊗	Your Name and the Telephone Number from where you are calling.		
⊗	Exact address of the release or threatened release.		
⊗	Date, time, cause, and type of incident (e.g. fire, air release, spill etc.)		
⊗	Material and quantity of the release, to the extent known.		
⊗	Current condition of the facility.		
⊗	Extent of injuries, if any.		
⊗	Possible hazards to public health and/ or the environment outside of the facility.		
B. Emergency Medical Facility			
List the local emergency medical facility that will be used by your business in the event of an accident or injury caused by a release or threatened release of hazardous material.			
HOSPITAL/CLINIC:		PHONE NO:	
		- -	
ADDRESS:			
CITY:		ZIP CODE:	

OFFICIAL USE ONLY			DATE RECEIVED		REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA	

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

C. Private Emergency Response	
DOES YOUR BUSINESS HAVE A PRIVATE ON-SITE EMERGENCY RESPONSE TEAM? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide an attachment that describes what policies and procedures your business will follow to notify your on-site emergency response team in the event of a release or threatened release of hazardous materials.	
CLEANUP/DISPOSAL CONTRACTOR List the contractor that will provide cleanup services in the event of a release.	
NAME OF CONTRACTOR:	PHONE NO: - -
ADDRESS:	
CITY:	ZIP CODE:
D. Arrangements With Emergency Responders	
If you have made special (i.e. contractual) arrangements with any police department, fire department, hospital, contractor, or State or local emergency response team to coordinate emergency services, describe those arrangements on the lines below:	
E. Evacuation Plan	
1. The following alarm signal(s) will be used to begin evacuation of the facility (<i>check all which apply</i>): <input type="checkbox"/> Verbal <input type="checkbox"/> Telephone (<i>including cellular</i>) <input type="checkbox"/> Alarm System <input type="checkbox"/> Public Address System <input type="checkbox"/> Intercom <input type="checkbox"/> Pagers <input type="checkbox"/> Portable Radio <input type="checkbox"/> Other (<i>specify</i>):	
2. <input type="checkbox"/> Evacuation map is prominently displayed throughout the facility.	
3. <input type="checkbox"/> Individual(s) responsible for coordinating evacuation including spreading the alarm and confirming the business has been evacuated:	
F. Earthquake Vulnerability	
Identify areas of the facility where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion.	
<input type="checkbox"/> Hazardous Waste/ Hazardous Materials Storage Areas <input type="checkbox"/> Bench/ Lab <input type="checkbox"/> Production Floor <input type="checkbox"/> Waste Treatment <input type="checkbox"/> Other:	<input type="checkbox"/> Process Lines
Identify mechanical systems where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion.	
<input type="checkbox"/> Utilities <input type="checkbox"/> Racks <input type="checkbox"/> Process Piping <input type="checkbox"/> Sprinkler Systems <input type="checkbox"/> Pressure Vessels <input type="checkbox"/> Shutoff Valves <input type="checkbox"/> Cabinets <input type="checkbox"/> Gas Cylinders <input type="checkbox"/> Other:	<input type="checkbox"/> Shelves <input type="checkbox"/> Tanks

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

IV. Emergency Equipment

22 CCR, Section 66265.52(e) [as referenced by Section 66262.34(a)(3)] requires that emergency equipment at the facility be listed. Completion of the following Emergency Equipment Inventory Table meets this requirement.

EMERGENCY EQUIPMENT INVENTORY TABLE

1. Equipment Category	2. Equipment Type	3. Location *	4. Description**
Personal Protective, Equipment, Safety Equipment, and First Aid Equipment	<input type="checkbox"/> Cartridge Respirators		
	<input type="checkbox"/> Chemical Monitoring Equipment <i>(describe)</i>		
	<input type="checkbox"/> Chemical Protective Aprons/Coats		
	<input type="checkbox"/> Chemical Protective Boots		
	<input type="checkbox"/> Chemical Protective Gloves		
	<input type="checkbox"/> Chemical Protective Suits <i>(describe)</i>		
	<input type="checkbox"/> Face Shields		
	<input type="checkbox"/> First Aid Kits/Stations <i>(describe)</i>		
	<input type="checkbox"/> Hard Hats		
	<input type="checkbox"/> Plumbed Eye Wash Stations		
	<input type="checkbox"/> Portable Eye Wash Kits <i>(i.e. bottle type)</i>		
	<input type="checkbox"/> Respirator Cartridges <i>(describe)</i>		
	<input type="checkbox"/> Safety Glasses/Splash Goggles		
	<input type="checkbox"/> Safety Showers		
Fire Extinguishing Systems	<input type="checkbox"/> Self-Contained Breathing Apparatuses (SCBA)		
	<input type="checkbox"/> Other <i>(describe)</i>		
	<input type="checkbox"/> Automatic Fire Sptinkler Systems		
	<input type="checkbox"/> Fire Alarm Boxes/Stations		
	<input type="checkbox"/> Fire Extinguisher Systems <i>(describe)</i>		
Spill Control Equipment and Decontamination Equipment	<input type="checkbox"/> Other <i>(describe)</i>		
	<input type="checkbox"/> Absorbents <i>(describe)</i>		
	<input type="checkbox"/> Berms/Dikes <i>(describe)</i>		
	<input type="checkbox"/> Decontamination Equipment <i>(describe)</i>		
	<input type="checkbox"/> Emergency Tanks <i>(describe)</i>		
	<input type="checkbox"/> Exhaust Hoods		
	<input type="checkbox"/> Gas Cylinders Leak Repair Kits <i>(describe)</i>		
	<input type="checkbox"/> Neutralizers <i>(describe)</i>		
	<input type="checkbox"/> Overpack Drums		
Communications and Alarm Systems	<input type="checkbox"/> Sumps <i>(describe)</i>		
	<input type="checkbox"/> Other <i>(describe)</i>		
	<input type="checkbox"/> Chemical Alarms <i>(describe)</i>		
	<input type="checkbox"/> Intercoms/ PA Systems		
	<input type="checkbox"/> Portable Radios		
	<input type="checkbox"/> Telephones		
Additional Equipment (Use Additional Pages if Needed.)	<input type="checkbox"/> Underground Tank Leak Detection Monitors		
	<input type="checkbox"/> Other <i>(describe)</i>		

* Use the Location Codes (LC) from the Site Map(s) prepared for your Contingency Plan.

** Describe the equipment and its capabilities. If applicable, specify any testing/maintenance procedures/intervals. Attach additional pages, numbered appropriately, if needed.

**Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN**

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

V. EMPLOYEE TRAINING

All facilities which handle hazardous materials must have a written employee training plan. A blank plan has been provided below for you to complete and submit. The items listed below are required per Health and Safety Code Section 25504 (c) and Title 19 Section 2732.

Facility personnel are trained as follows:

- ⊞ Familiarity with all plans and procedures specified in the Contingency Plan.
- ⊞ Methods for Safe Handling of Hazardous Materials.
- ⊞ Safety procedures in the event of a release or threatened release of a hazardous material.
- ⊞ Use of Emergency Response equipment and supplies under the control of the business.
- ⊞ Procedures for Coordination with local Emergency Response Organizations.

Training shall be provided:

- ⊞ Initially for all new employees.
- ⊞ Annually, including refresher courses, for all employees.

Note: These training programs may take into consideration the position of each employee.

Additional training should include:

- ⊞ Internal alarm/notification procedures.
- ⊞ Evacuation/re-entry procedures and assembly point locations.
- ⊞ Material Safety Data Sheet (MSDS) training including specific hazard(s) of each chemical to which employees may be exposed, including routes of exposure (*i.e. inhalation, ingestion, absorption*).

VI. HAZARDOUS WASTE GENERATOR TRAINING

If your business is a hazardous waste generator, you are required to provide training in hazardous waste management for all workers who handle hazardous waste at your site (22 CCR §66265.16). You are also required to document training. The items below are required.

EMPLOYEE TRAINING	
⊞	Facility personnel will successfully complete training within six months after the date of their employment or assignment to a facility or to a new position at a facility.
⊞	Employees will not handle hazardous wastes without supervision until trained.
TRAINING DOCUMENTATION	
The owner or operator must maintain the following documents and records at the facility:	
⊞	Job title for each position at the facility that is related to hazardous waste management, and the names of the employee(s) filling the position(s).
⊞	Description for each position listed above (must include required skill, education, or other qualifications as well as duties of employees assigned to the position).
⊞	Description of <i>type</i> and <i>amount</i> of both introductory and continuing training given to each employee.
⊞	Records that document that the requirements for training or job experience have been met.
⊞	Current employees' training records (to be retained until closure of the facility).
⊞	Former employees' training records (to be retained at least three years after termination of employment).

INTENTIONALLY LEFT BLANK

Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

SITE MAP

BUSINESS NAME				3		
SITE ADDRESS		103	CITY	104	ZIP CODE	105
DATE MAP DRAWN - -		MAP #		FACILITY ID #		1

	A	B	C	D	E	F	G	H	I	J	
1											For Site Map <ul style="list-style-type: none"> Scale of Map Loading Areas Parking Lots Internal Roads Storm and Sewer Drains Adjacent Property Use Locations and Names of Adjacent Streets and Alleys Access and Egress Points and Roads Primary and Alternate Evacuation Routes For Sub-Site Map <ul style="list-style-type: none"> Scale of Map Location of Each Storage Area Location of Each Hazardous Material Handling Area Location of Emergency Response Equipment Scale: 1" = _____ Ft. <div style="text-align: center; margin-top: 20px;"> North </div>
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

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DIV	BN	STA	OTHER	DISTRICT	CUPA	PA		

II. HAZARDOUS MATERIALS SECTION

To be completed by all businesses that handle hazardous materials and/or regulated substances (including extremely hazardous substances)

Be advised that appropriate signatures must be provided on forms.

This section includes:

- HAZARDOUS MATERIALS INVENTORY FORM - CHEMICAL DESCRIPTION

One chemical per page. Make photocopies as necessary.

CAS Numbers must be provided for each chemical and hazardous component. To obtain the CAS#, refer to the chemical's MSDS (Materials Safety Data Sheet), or contact the chemical's manufacturer, or the Chemical Abstracts Service at (614) 447-3600.

Facilities reporting chemicals subject to EPCRA (Emergency Planning and Community Right-to-Know Act) reporting thresholds must sign each page for each EPCRA reported chemical. For more information on EPCRA, contact US EPA at (800) 424-9346, or visit US EPA's EPCRA website at: www.epa.gov/epaoswer/hotline/

- REGULATED SUBSTANCE REGISTRATION FORM

One chemical per page. Make photocopies as necessary.

- REGULATED SUBSTANCE LIST

Hazardous Materials Inventory – Chemical Description (LACoCUPA Form 2731)

Complete a separate Hazardous Materials Inventory - Chemical Description page for each hazardous material (hazardous substances and hazardous waste) handled at your facility in aggregate quantities equal to or greater than 500 pounds, 55 gallons, 200 cubic feet of gas (calculated at standard temperature and pressure), or the federal threshold planning quantity for Extremely Hazardous Substances, whichever is less. Also, complete a page for each radioactive material handled over quantities for which an emergency plan is required by 10 CFR Parts 30, 40, or 70. Completed inventories should reflect all reportable quantities of hazardous materials at your facility, reported **separately** for each building or outside adjacent area, with **separate** pages for unique occurrences of physical state, storage temperature and storage pressure. Please, number all pages of your submittal.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This is the unique number which identifies your facility.
3. BUSINESS NAME Enter the full legal name of the business.
199. SUB LOCATION Enter the sub-location where applicable such as basement, emergency generator, chiller unit, pump room. If chemicals are stored in different suites within a building, the suite may also be entered in the sub location field.
200. ADD/DELETE/ REVISE Indicate if the material is being added to the inventory, deleted from the inventory, or if the information previously submitted is being revised. NOTE: You may choose to leave this blank if you resubmit your entire inventory annually.
201. CHEMICAL LOCATION Enter the building or outside/ adjacent area where the hazardous material is handled. A chemical that is stored at the same pressure and temperature, in multiple locations within a building, can be reported on a single page. NOTE: This information is not subject to public disclosure pursuant to HSC § 25506.
202. CHEMICAL LOCATION CONFIDENTIAL - EPCRA All businesses which are subject to the Emergency Planning and Community Right to Know Act (EPCRA) must check "Yes" to keep chemical location information confidential; otherwise, check "No".
203. MAP NUMBER If a map is included, enter the number of the map on which the location of the hazardous material is shown.
204. GRID NUMBER If grid coordinates are used, enter the grid coordinates of the map that correspond to the location of the hazardous material.
205. CHEMICAL NAME Enter the proper chemical name associated with the Chemical Abstract Service (CAS) number of the hazardous material. This should be the International Union of Pure and Applied Chemistry (IUPAC) name found on the Material Safety Data Sheet (MSDS). NOTE: If the chemical is a mixture, do not complete this field; instead, complete the "COMMON NAME" field.
206. TRADE SECRET - Check "Yes" if the information in this section is declared a trade secret, or "No" if it is not.
State requirement : If yes, and the business is not subject to EPCRA, disclosure of trade secret information is bound by HSC § 25511. **Federal requirement :** If yes, and the business is subject to EPCRA, disclosure of the designated Trade Secret information is bound by 40 CFR, and the business must submit a "Substantiation to Accompany Claims of Trade Secrecy" form (40 CFR 350.27) to U.S. EPA.
207. COMMON NAME Enter the common name or trade name of the hazardous material or mixture containing a hazardous material.
208. EHS Check "Yes" if the hazardous material is an Extremely Hazardous Substance (EHS), as defined in 40 CFR, Part 355, Appendix A. If the material is a mixture containing an EHS, leave this section blank and complete the section on hazardous components below.
209. CAS # Enter the Chemical Abstract Service number for the hazardous material. For mixtures, enter the CAS number of the mixture only if it has a number; otherwise, leave this blank and report CAS numbers of the individual hazardous components in the appropriate section below.
210. FIRE CODE HAZARD CLASSES This information shall be provided if the local fire chief deems it necessary and requests the CUPA or PA to collect it. A list of the hazard classes and instructions on how to determine which class a material falls under are found in the appendices of Article 80 of the Uniform Fire Code. If a material has more than one hazard class, include all. Contact CUPA or PA for guidance.
211. HAZARDOUS MATERIAL TYPE Check the one box that best describes the type of hazardous material: pure, mixture or waste. If the substance is a waste, check only that box. If the substance is a mixture or waste, complete the hazardous components section.
212. RADIOACTIVE Check "Yes" if the hazardous material is radioactive or "No" if it is not.
213. CURIES If the material is radioactive, report the activity in curies; use up to nine digits with a floating decimal point to report activity in curies.
214. PHYSICAL STATE Check the one box that best describes the state in which the hazardous material is handled: solid, liquid or gas.
215. LARGEST CONTAINER Enter the total capacity of the largest container in which the material is stored.
216. FEDERAL HAZARD CATEGORIES Check all categories that describe the physical and health hazards associated with the hazardous material. **Fire:** Flammable Liquids and Solids, Combustible Liquids, Pyrophorics, and Oxidizers.
Pressure Release: Explosives, Compressed Gases, and Blasting Agents.
Acute Health (Immediate): Highly Toxic, Toxic, Irritants, Sensitizers, Corrosives, and other chemicals with an adverse effect with short term exposure.
Reactive: Unstable Reactive, Organic Peroxides, Water Reactive, and Radioactive.
Chronic Health (Delayed): Carcinogens, Teratogens, Mutagens, and other chemicals with an adverse effect with long term exposure.
217. AVERAGE DAILY AMOUNT Calculate the average daily amount of the hazardous material or mixture containing a hazardous material, in each building or adjacent/ outside area. Calculations shall be based on the previous year's inventory of the material reported on this page. Total all daily amounts and divide by the number of days the chemical will be on site. If this is a material that has not previously been present at this location, the amount shall be the average daily amount you project to be on hand during the course of the year. This amount should be consistent with the units reported in box 221 and should not exceed that of maximum daily amount.
218. MAXIMUM DAILY AMOUNT Enter the maximum amount of each hazardous material or mixture containing a hazardous material, which is handled in a building or adjacent/outside area at any one time over the course of the year. This amount must contain at a minimum last year's inventory of the material reported on this page, with the reflection of additions, deletions, or revisions projected for the current year. This amount should be consistent with the units reported in box 221.
219. ANNUAL WASTE AMOUNT If the hazardous material being inventoried is a waste, provide an estimate of the annual amount handled.
220. STATE WASTE CODE If the material is a waste, enter the California 3-digit hazardous waste code from the Uniform Hazardous Waste Manifest.
221. UNITS Check the unit of measure that is most appropriate for the material being reported on this page: gallons, pounds, cubic feet or tons.
NOTE: If the material is a federally defined Extremely Hazardous Substance (EHS), all amounts must be reported in pounds. If material is a mixture containing an EHS, report the units that the material is stored in (gallons, pounds, cubic feet, or tons).
222. DAYS ON SITE List the total number of days during the year that the material is on site.
223. STORAGE CONTAINER Check all boxes that describe the type of storage containers in which the hazardous material is stored.
NOTE: If appropriate, you may choose more than one.
224. STORAGE PRESSURE Check the one box that best describes the pressure at which the hazardous material is stored.
225. STORAGE TEMPERATURE Check the one box that best describes the temperature at which the hazardous material is stored.
226. HAZARDOUS COMPONENTS 1-5 (% BY WEIGHT) Enter the percentage weight of the hazardous component in a mixture. If a range of percentages is available, report the highest percentage in that range. (Report components 2 - 5 in boxes 230, 234, 238, and 242.)
227. HAZARDOUS COMPONENTS 1-5 NAME When reporting a hazardous material mixture, list up to five chemical names of hazardous components in that mixture by percent weight (refer to MSDS or, in the case of trade secrets, refer to manufacturer). All hazardous components in the mixture present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, should be reported. If more than five hazardous components are present above these percentages, attach an additional sheet of paper to capture the required information. When reporting waste mixtures, list mineral and chemical composition. (Report components 2 - 5 in boxes 231, 235, 239, and 243.)
228. HAZARDOUS COMPONENTS 1-5 EHS Check "Yes" if the component of the mixture is considered an Extremely Hazardous Substance as defined in 40 CFR, Part 355. (Report components 2 - 5 in boxes 232, 236, 240, and 244.)
229. HAZARDOUS COMPONENTS 1-5 CAS List Chemical Abstract Service numbers of the hazardous components in the mixture. (Repeat for 2-5.)
246. LOCALLY COLLECTED INFORMATION Contact your local agency about if they require additional hazardous materials inventory information.
- 246a. RS - Check "Yes" if the hazardous material is a Regulated Substance (RS) under the CalARP Program and listed on the attached CalARP Program Regulated Substance list.
- 246b. RS - HAZARDOUS COMPONENTS 1-5 RS. Check "Yes" if the component of the mixture is considered an RS.

UNIFIED PROGRAM (UP) FORM

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (LACoCUPA Form 2731)

(one page per material per building or area)

ADD
 DELETE
 REVISE
 REPORTING YEAR 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3

CHEMICAL LOCATION 201 SUB LOCATION 199 CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202
 YES NO

FACILITY ID # 1 MAP# (optional) 203 GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205 TRADE SECRET Yes No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207 EHS* Yes No 208 RS* Yes No 246a

CAS# 209 *If EHS or RS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) a. PURE b. MIXTURE c. WASTE 211 RADIOACTIVE Yes No 212 CURIES 213

PHYSICAL STATE (Check one item only) a. SOLID b. LIQUID c. GAS 214 LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) a. FIRE b. REACTIVE c. PRESSURE RELEASE d. ACUTE HEALTH e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217 MAXIMUM DAILY AMOUNT 218 ANNUAL WASTE AMOUNT 219 STATE WASTE CODE 220

UNITS* (Check one item only) a. GALLONS b. CUBIC FEET c. POUNDS d. TONS 221 DAYS ON SITE: 222
* If EHS, amount must be in pounds.

STORAGE CONTAINER a. ABOVE GROUND TANK e. PLASTIC/NONMETALLIC DRUM i. FIBER DRUM m. GLASS BOTTLE q. RAIL CAR
 b. UNDERGROUND TANK f. CAN j. BAG n. PLASTIC BOTTLE r. OTHER
 c. TANK INSIDE BUILDING g. CARBOY k. BOX o. TOTE BIN
 d. STEEL DRUM h. SILO l. CYLINDER p. TANK WAGON 223

STORAGE PRESSURE a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT 224

STORAGE TEMPERATURE a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	RS 246b	CAS #
1 226	227	<input type="checkbox"/> Yes 228	<input type="checkbox"/> Yes	229
2 230	231	<input type="checkbox"/> Yes 232	<input type="checkbox"/> Yes	233
3 234	235	<input type="checkbox"/> Yes 236	<input type="checkbox"/> Yes	237
4 238	239	<input type="checkbox"/> Yes 240	<input type="checkbox"/> Yes	241
5 242	243	<input type="checkbox"/> Yes 244	<input type="checkbox"/> Yes	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information. 246

ADDITIONAL LOCALLY COLLECTED INFORMATION

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

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UNIFIED PROGRAM (UP) FORM
CalARP PROGRAM REGULATED SUBSTANCE REGISTRATION

THIS PAGE IS TO BE COMPLETED FOR A STATIONARY SOURCE THAT HANDLES A REGULATED SUBSTANCE (RS) IN A PROCESS AT OR ABOVE THE THRESHOLD QUANTITY. REGULATED SUBSTANCES (INCLUDING FEDERAL LISTED AND STATE LISTED REGULATED SUBSTANCES) MUST BE REGISTERED FOR THE PURPOSE OF COMPLYING WITH THE Cal ARP (CALIFORNIA ACCIDENTAL RELEASE PREVENTION) PROGRAM. THE OWNER OR OPERATOR SHALL COMPLETE A HAZARDOUS MATERIALS INVENTORY FORM AND A REGISTRATION FOR EACH REGULATED SUBSTANCE PER EACH PROCESS.

REASON FORM IS BEING SUBMITTED:		<input type="checkbox"/> UPDATE	<input type="checkbox"/> CORRECTION	<input type="checkbox"/> DE-REGISTRATION	<input type="checkbox"/> WITHDRAWAL	247
BUSINESS NAME						3
FACILITY ID#	1	USEPA FACILITY ID #	2	PROGRAM LEVEL <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		246c
NAME OF CORPORATE PARENT COMPANY			246d	DUN & BRADSTREET		106
PERSON RESPONSIBLE FOR RMP (First Name, Last Name)			TITLE		E-MAIL ADDRESS (Optional)	246e
PARENT COMPANY E-MAIL ADDRESS (Optional)			246f	COMPANY HOMEPAGE ADDRESS (Optional)		246g
NAME OF RMP PREPARER			PHONE NUMBER			246h
RMP PREPARER MAILING ADDRESS			246i	PHONE NUMBER FOR PUBLIC INQUIRIES (Optional)		246j
LATITUDE	246k	LONGITUDE	246l	METHOD USED TO OBTAIN LATITUDE AND LONGITUDE		246m
LOCATION DESCRIPTION			246n	NUMBER OF EMPLOYEES	246o	PROCESS NAICS
LEPC COMMITTEE (Optional)			246p	OSHA VOLUNTARY PROTECTION PROGRAM STATUS (Optional)		246q
DOES THE FACILITY HAVE SUBSTANCES LISTED IN 40 CFR 355 APPENDIX A (EHS)? YES <input type="checkbox"/> NO <input type="checkbox"/>			208	DO ANY PROCESSES REQUIRE A CLEAN AIR ACT TITLE V OPERATING PERMIT? <input type="checkbox"/> YES <input type="checkbox"/> NO		246r
IS FACILITY SUBJECT TO 29CFR 1910.119/CCR 8 SEC 5189(PSM) ? <input type="checkbox"/> YES <input type="checkbox"/> NO			246t	LAST SAFETY INSPECTION DATE		246u
CHEMICAL NAME			205	CAS#		209
MAXIMUM DAILY AMOUNT			218a	UNITS IN POUNDS		221
PROCESS DESCRIPTION						246v
PRINCIPAL EQUIPMENT						246w
CERTIFICATION						
I, the owner or operator of the aforementioned business, hereby certify that the registration information provided above is true, accurate, and complete to the best of my knowledge based upon reasonable inquiry. I am fully aware that this certification executed on the date indicated below is made under penalty of perjury under the laws of the State of California.						
OWNER/OPERATOR NAME			246x	OWNER/OPERATOR TITLE		246y
OWNER/OPERATOR SIGNATURE			DATE			246z

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CalARP PROGRAM REGULATED SUBSTANCE REGISTRATION

This page is to be completed for a Stationary Source that handles a Regulated Substance (RS) in a process at or above the threshold quantity. Regulated Substances (including Federal and State Listed Regulated Substances) must be registered for the purpose of complying with the California Accidental Release Prevention (Cal ARP) program. The owner or operator shall complete a Hazardous Materials Inventory – Chemical Description page and a Regulated Substance Registration for each Regulated Substance per process. Contact your local agency (CUPA or PA) for any additional assistance.

Note: A list of Federal and State Regulated Substances is attached for your reference.

1. FACILITY ID NUMBER This number is assigned by the CUPA. This unique number identifies your facility.
2. EPA ID NUMBER Enter your facility's 12-character EPA identification number issued by the USEPA.
3. BUSINESS NAME Enter the full legal name of the business.
106. DUN & BRADSTREET Enter the Dun and Bradstreet number of the Principal Company or entity which owns at least 50 percent of the voting stock. The Dun and Bradstreet number allows your business to be cross-referenced to various business information. You may be able to obtain this number from your finance department. If your business does not have this information, contact Dun and Bradstreet at (610) 882-7748 or via the internet at www.dnb.com.
- 107a. PROCESS NAICS CODE Enter the specific *North American Industry Classification System Code* for the process using, treating, storing, producing, disposing, or otherwise handling regulated substances.
205. CHEMICAL NAME Enter the proper chemical name associated with the Chemical Abstract Service (CAS) number of the hazardous material. This should be the International Union of Pure and Applied Chemistry (IUPAC) name found on the Material Safety Data Sheet (MSDS).
208. EPCRA SECTION 355 Check "Yes" if the stationary source is subject to Part 355 of Title 40 of CFR.
209. CAS # Enter the Chemical Abstract Service number for the hazardous material.
- 218a. MAXIMUM DAILY AMOUNT Enter the maximum amount of hazardous material or mixture containing a hazardous material which is handled in the process at any one time over the course of the year.
221. UNITS IN POUNDS Leave this box blank. Note: All Regulated Substances must be reported in pounds to two significant digits.
- 246c. PROGRAM LEVEL Indicate the proper *Program Level* this process falls under. Mark either Program 1, 2, or 3 to identify with which program the process complies.
- 246d. NAME OF CORPORATE PARENT COMPANY Enter the legal name of the Principal Company or entity which owns at least 50 percent of the voting stock.
- 246e. PERSON RESPONSIBLE FOR RMP Enter name, title and (optional) e-mail address of the person designated as responsible for the RMP.
- 246f. PARENT COMPANY E-MAIL ADDRESS (Optional) Enter the e-mail address of the parent company (optional information).
- 246g. COMPANY HOMEPAGE ADDRESS (Optional) Enter the web address of the company (optional information).
- 246h. NAME / PHONE NUMBER OF RMP PREPARER Enter the contractor's name and phone number who prepared the RMP (if any).
- 246i. RMP PREPARER MAILING ADDRESS Enter the mailing address of the contractor that prepared the RMP (if any).
- 246j. PHONE NUMBER FOR PUBLIC INQUIRIES (Optional) Enter a phone number that the public may call if they have questions about your facility or your RMP (optional information).
- 246k. LATITUDE Enter the degrees of latitude where the chemical process is located. The latitude of your facility can be determined in several ways, including through the use of U.S. Geological Survey (USGS), global positioning system (GPS) receivers, and web-based siting tools. Latitude is the degrees north or south of the equator. Latitude is measured in degrees, minutes, and seconds. We recommend the use of USGS topographical quadrangle maps to make this determination. When using USGS, the valid latitudes for LA County range from 33°17'53N to 34°49'14N. Be sure the latitude fits this range.
- 246l. LONGITUDE Enter the degrees of longitude where the chemical process is located. The longitude of your facility can be determined in several ways, including through the use of USGS, GPS receivers, and web-based siting tools. Longitude is the degrees east or west of the prime meridian. Longitude is measured in degrees, minutes, and seconds. We recommend the use of USGS topographical quadrangle maps to make this determination. When using USGS, the valid longitudes for LA County range from 117°38'39W to 118°56'39W. Be sure the latitude fits this range.
- 246m. METHOD USED TO OBTAIN LATITUDE AND LONGITUDE Source of latitude and longitude information.
- 246n. LOCATION DESCRIPTION A description of location that latitude and longitude represent.
- 246o. NUMBER OF EMPLOYEES The number of full time employees at the stationary source.
- 246p. LEPC COMMITTEE (Optional) Enter the Local Emergency Planning Committee to which the facility belongs (optional information).
- 246q. OSHA VOLUNTARY PROTECTION PROGRAM STATUS (Optional) Enter whether you participate in this OSHA program and the status of your facility (optional information). Program levels are Star, Merit, or Star Demonstration.
- 246r. CAA TITLE V State and local operating permit programs are required under Title V of the Clean Air Act (40 CFR Part 70). Title V requires major sources of air pollution to receive permits, pay fees to cover cost of administering the program, and sign a binding certification of compliance on all permit applications and documents. Check the appropriate box, "yes" or "no."
- 246s. PERMIT NUMBER If you have a Title V operating permit, enter the permit number.
- 246t. OSHA PSM The OSHA Process Safety Management Standard, codified at 29 CFR 1910.119, is similar to the Program 3 prevention program, and is designed to protect workers from the effects of accidental releases of hazardous substances. *Note:*
This question covers all processes at your facility; if any process at your facility is subject to OSHA PSM, you must answer yes even if the PSM process does not involve a Regulated Substance. Answer the question either "yes" or "no."
- 246u. LAST SAFETY INSPECTION Enter the date of the last safety inspection of your facility and indicate the Agency (OSHA, State OSHA, EPA, State EPA, Fire Dept., etc..) that performed the inspection.
- 246v. PROCESS DESCRIPTION Describe the *process* and/or operations involved in the use, treatment, storage, production, disposal or otherwise handling of the regulated substances (include process pressures and temperature, and whether it is a raw material or an intermediate). *Note:* Any group of interconnected vessels or separate vessels, located such that a regulated substance could be involved in a potential release, is considered a single process.
- 246w. PRINCIPAL EQUIPMENT List the equipment and/or components used in the process involving the Regulated Substance.
- 246x. NAME OF OWNER / OPERATOR The full name of the owner/operator who signed the registration page.
- 246y. TITLE Enter the title of the person signing the page.
- 246z. DATE Enter the date the page was signed.
247. REASON FORM IS BEING SUBMITTED Check "Update" box if the RMP is submitted for 5-year update, process change that requires a revised PHA or hazard review or any reasons discussed in 19 CCR 2745.10; check "Correction" box if there is change or error in administrative information, a new accident history information, or change in emergency contact information; check "De-registration" box if the facility is no longer subject to the CalARP Program; check "Withdrawal" box if the facility was erroneously considered subject to the CalARP Program.

CaIARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis	CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis
Acetaldehyde	75-07-0	10,000	g	Crotonaldehyde (2-Butenal)	4170-30-3	1,000	b
* Acetone Cyanohydrin	75-86-5	1,000		Cyanogen (Ethanedinitrile)	460-19-5	10,000	f
Acetone Thiosemicarbazide	1752-30-3	1,000/10,000 ¹		Cyanogen Bromide	506-68-3	500/10,000 ¹	
Acetylene (Ethyne)	74-86-2	10,000	f	Cyanogen Chloride	506-77-4	10,000	c
Acrolein (2-Propenal)	107-02-8	500	b	Cyanogen Iodide	506-78-5	1,000/10,000 ¹	
Acrylamide	79-06-1	1,000/10,000 ¹		Cyanuric Fluoride	675-14-9	100	
Acrylonitrile (2- Propenenitrile)	107-13-1	10,000	b	Cycloheximide	66-81-9	100/10,000 ¹	
Acrylyl Chloride (2-Propenoyl Chloride)	814-68-6	100	b	Cyclohexylamine (Cyclohexanamine)	108-91-8	10,000	b
Aldicarb	116-06-3	100/10,000 ¹		Cyclopropane	75-19-4	10,000	f
Aldrin	309-00-2	500/10,000 ¹		Decaborane (14)	17702-41-9	500/10,000 ¹	
Allyl Alcohol (2-Propen-1-ol)	107-18-6	1,000	b	Dialiflor	10311-84-9	100/10,000 ¹	
Allylamine (2-Propen-1-Amine)	107-11-9	500	b	Diborane	19287-45-7	100	b
Aluminum Phosphide	20859-73-8	500		Dichlorosilane (Silane, Dichloro-)	4109-96-0	10,000	f
Aminopterin	54-62-6	500/10,000 ¹		* Diepoxybutane	1464-53-5	500	
Amiton Oxalate	3734-97-2	100/10,000 ¹		Difluoroethane (Ethane, 1,1-Difluoro-)	75-37-6	10,000	f
Ammonia, Anhydrous ²	7664-41-7	500	a,b	Digitoxin	71-63-6	100/10,000 ¹	
Ammonia, Aqueous	7664-41-7	500	a,b	Digoxin	20830-75-5	10/10,000 ¹	
* Aniline	62-53-3	1,000		Dimethoate	60-51-5	500/10,000 ¹	
Antimycin A	1397-94-0	1,000/10,000 ¹		Dimethyl-p-Phenylenediamine	99-98-9	10/10,000 ¹	
ANTU (1-Naphthalenylthiourea)	86-88-4	500/10,000 ¹		* Dimethyl Sulfate	77-78-1	500	
Arsenic Pentoxide	1303-28-2	100/10,000 ¹		Dimethylamine (Methanamine, N-Methyl-)	124-40-3	10,000	f
Arsenous Oxide (Arsenic Trioxide)	1327-53-3	100/10,000 ¹		Dimethyldichlorosilane	75-78-5	500	b
Arsenous Trichloride	7784-34-1	500	b	Dimethylhydrazine (1,1-Dimethylhydrazine)	57-14-7	1,000	b
Arsine (Arsenic Hydride)	7784-42-1	100	b	2,2-Dimethylpropane (Propane, 2,2-Dimethyl-)	463-82-1	10,000	f
Azinphos-Ethyl	2642-71-9	100/10,000 ¹		Dimetilan	644-64-4	500/10,000 ¹	
Azinphos-Methyl [Guthion]	86-50-0	10/10,000 ¹		Dinitrocresol (4,6-Dinitro-o-Cresol)	534-52-1	10/10,000 ¹	
Benzene, 1-(Chloromethyl)-4-Nitro-	100-14-1	500/10,000 ¹		Dinoseb	88-85-7	100/10,000 ¹	
Benzeneearsonic Acid	98-05-5	10/10,000 ¹		Dinoterb	1420-07-1	500/10,000 ¹	
Benzimidazole, 4,5-Dichloro-2-(Trifluoromethyl)	3615-21-2	500/10,000 ¹		Diphacinone	82-66-6	10/10,000 ¹	
* Benzotrichloride (Benzoictrichloride)	98-07-7	100		* Disulfoton	298-04-4	500	
Bicyclo(2.2.1) Heptane-2-Carbonitrile, 5-Chloro-				Dithiazanine Iodide	514-73-8	500/10,000 ¹	
6-(((Methylamino)Carbonyl)Oxy)Imino)-				Dithiobiuret	541-53-7	100/10,000 ¹	
(1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-	15271-41-7	500/10,000 ¹		Emetine, Dihydrochloride	316-42-7	1/10,000 ¹	
Bis(Chloromethyl) Ketone	534-07-6	10/10,000 ¹		Endosulfan	115-29-7	10/10,000 ¹	
Bitoscanate	4044-65-9	500/10,000 ¹		Endothion	2778-04-3	500/10,000 ¹	
Boron Trichloride (Trichloroborane)	10294-34-5	500	b	Endrin	72-20-8	500/10,000 ¹	
Boron Trifluoride (Trifluoroborane)	7637-07-2	500	b	Epichlorohydrin ((Chloromethyl) Oxirane)	106-89-8	1,000	b
Boron Trifluoride Compound w/Methyl Ether(1:1)				EPN (Phenylphosphonothioic Acid o-Ethyl- (4-Nitrophenyl) Ester)	2104-64-5	100/10,000 ¹	
(Boron, Trifluoro (Oxybis (Metane)))-,T-4-	353-42-4	1,000	b	Ergocalciferol	50-14-6	1,000/10,000 ¹	
Bromadiolone	28772-56-7	100/10,000 ¹		Ergotamine Tartrate	379-79-3	500/10,000 ¹	
Bromine	7726-95-6	500	a,b	Ethane	74-84-0	10,000	f
Bromotrifluoroethylene (Ethene, Bromotrifluoro-)	598-73-2	10,000	f	Ethyl Acetylene (1-Butyne)	107-00-6	10,000	f
1,3-Butadiene	106-99-0	10,000	f	Ethyl Chloride (Ethane, Chloro-)	75-00-3	10,000	f
Butane	106-97-8	10,000	f	Ethyl Ether (Ethane, 1,1'-Oxybis-)	60-29-7	10,000	g
Butene	25167-67-3	10,000	f	Ethyl Mercaptan (Ethanethiol)	75-08-1	10,000	g
1-Butene	106-98-9	10,000	f	Ethyl Nitrite (Nitrous Acid, Ethyl Ester)	109-95-5	10,000	f
2-Butene	107-01-7	10,000	f	Ethylamine (Ethanamine)	75-04-7	10,000	f
2-Butene-cis	590-18-1	10,000	f	Ethylene (Ethene)	74-85-1	10,000	f
2-Butene-trans (2-Butene, (E))	624-64-6	10,000	f	Ethylene Fluorohydrin	371-62-0	10	
Cadmium Oxide	1306-19-0	100/10,000 ¹		Ethylene Oxide (Oxirane)	75-21-8	1,000	a,b
Cadmium Stearate	2223-93-0	1,000/10,000 ¹		Ethylenediamine (1,2-Ethanediamine)	107-15-3	10,000	b
Calcium Arsenate	7778-44-1	500/10,000 ¹		Ethyleneimine (Aziridine)	151-56-4	500	b
Camphochlor	8001-35-2	500/10,000 ¹		Fenamiphos	22224-92-6	10/10,000 ¹	
Cantharidin	56-25-7	100/10,000 ¹		Fluometil	4301-50-2	100/10,000 ¹	
Carbachol Chloride	51-83-2	500/10,000 ¹		Fluorine	7782-41-4	500	b
Carbamic Acid, Methyl-,o-(((2,4-Dimethyl- 1,3-Dithiolan-2-yl) Methylene)Amino)-	26419-73-8	100/10,000 ¹		Fluoroacetamide	640-19-7	100/10,000 ¹	
Carbofuran	1563-66-2	10/10,000 ¹		Fluoroacetic Acid	144-49-0	10/10,000 ¹	
Carbon Disulfide	75-15-0	10,000	b	Fluoroacetyl Chloride	359-06-8	10	
Carbon Oxy sulfide (Carbon Oxide Sulfide (COS))	463-58-1	10,000	f	Fluorouracil	51-21-8	500/10,000 ¹	
Chlorine	7782-50-5	100	a,b	Formaldehyde ²	50-00-0	500	b
Chlorine Dioxide (Chlorine Oxide (ClO2))	10049-04-4	1,000	c	Formetanate Hydrochloride	23422-53-9	500/10,000 ¹	
Chlorine Monoxide (Chlorine Oxide)	7791-21-1	10,000	f	Formparanate	17702-57-7	100/10,000 ¹	
Chlormequat Chloride	999-81-5	100/10,000 ¹		Fuberidazole	3878-19-1	100/10,000 ¹	
Chloroacetic Acid	79-11-8	100/10,000 ¹		Furan	110-00-9	500	b
Chloroform (Methane, trichloro-)	67-66-3	10,000	b	Gallium Trichloride	13450-90-3	500/10,000	
Chloromethyl Ether (Methane,Oxybis(chloro-)	542-88-1	100	b	Hydrazine	302-01-2	1,000	b
Chloromethyl Methyl Ether (Chloromethoxymethane)	107-30-2	100	b	Hydrochloric Acid (conc 37% or greater)	7647-01-0	15,000	d
Chlorophacinone	3691-35-8	100/10,000 ¹		Hydrocyanic Acid	74-90-8	100	a,b
1-Chloropropylene (1-Propene, 1-Chloro-)	590-21-6	10,000	g	Hydrogen	1333-74-0	10,000	f
2-Chloropropylene (1-Propene, 2-Chloro-)	557-98-2	10,000	g	Hydrogen Chloride,(Gas)	7647-01-0	500	a
Chloroxuron	1982-47-4	500/10,000 ¹		Hydrogen Cyanide (Hydrocyanic Acid), (Gas)	74-90-8	100	
Chromic Chloride	10025-73-7	1/10,000 ¹		Hydrogen Fluoride/Hydrofluoric Acid			
Cobalt,((2,2'-(1,2-Ethanediy)bis(Nitri)lomethylidene))				(Hydrofluoric Acid)	7664-39-3	100	a,b
Bis(6-Fluorophenolato)((2)-N,N',O,O')-	62207-76-5	100/10,000 ¹		Hydrogen Selenide	7783-07-5	10	b
Cobalt Carbonyl	10210-68-1	10/10,000 ¹		Hydrogen Sulfide	7783-06-4	500	a,b
Colchicine	64-86-8	10/10,000 ¹		* Hydroquinone ⁴	123-31-9	500/10,000 ¹	
Coumaphos	56-72-4	100/10,000 ¹		Iron, Pentacarbonyl-			
Coumatetralyl	5836-29-3	500/10,000 ¹		(Iron Carbonyl (Fe(CO)5, (TB-5-11)-)	13463-40-6	100	b
o-Cresol	95-48-7	1,000/10,000 ¹		Isobutanzan	297-78-9	100/10,000 ¹	
Crimidine	535-89-7	100/10,000 ¹		Isobutane (Propane, 2-Methyl)	75-28-5	10,000	f
Crotonaldehyde ((E)-(2-Butenal,(E))-)	123-73-9	1,000	b				

CaIARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis	CHEMICAL NAME	CAS #	TQ (lbs)	Listing Basis
Isobutyronitrile (2-Methylpropanenitrile)	78-82-0	1,000	b	Phenylhydrazine Hydrochloride	59-88-1	1,000/10,000 ¹	
Isocyanic Acid,3,4-Dichlorophenyl Ester	102-36-3	500/10,000 ¹		Phenylmercury Acetate	62-38-4	500/10,000 ¹	
Isodrin	465-73-6	100/10,000 ¹		Phenylsilatrane	2097-19-0	100/10,000 ¹	
Isopentane (Butane, 2-Methyl-)	78-78-4	10,000	g	Phenylthiourea	103-85-5	100/10,000 ¹	
Isophorone Diisocyanate	4098-71-9	100		* Phorate	298-02-2	10	
Isoprene (1,3-Butadiene, 2-Methyl-)	78-79-5	10,000	g	Phosacetim	4104-14-7	100/10,000 ¹	
Isopropyl Chloride (Propane, 2-Chloro-)	75-29-6	10,000	g	Phosfolan	947-02-4	100/10,000 ¹	
Isopropyl Chloroformate (Carbonochloridic Acid, 1-Methylethyl Ester)	108-23-6	1,000	b	Phosgene (Carbonyl Chloride)			
Isopropylamine (2-Propanamine)	75-31-0	10,000	g	(Carbonyl Dichloride)	75-44-5	10	a,b
Leptophos	21609-90-5	500/10,000 ¹		Phosmet	732-11-6	10/10,000 ¹	
* Lewisite (Chlorovinylarsine Dichloride)	541-25-3	10		Phosphine (Hydrogen Phosphide)	7803-51-2	500	b
Lindane	58-89-9	1,000/10,000 ¹		* Phosphonothioic Acid, Methyl-,S-(2-(Bis (1-Methylethyl)Amino)Ethyl) O-Ethyl Ester	50782-69-9	100	
Lithium Hydride	7580-67-8	100		Phosphorus	7723-14-0	100	
Malononitrile	109-77-3	500/10,000 ¹		Phosphorus Oxychloride	10025-87-3	500	b
* Manganese,Tricarbonyl				Phosphorus Pentachloride	10026-13-8	500	
Methylcyclopentadienyl	12108-13-3100			Phosphorus Trichloride	7719-12-2	1,000	b
Mercuric Acetate	1600-27-7	500/10,000 ¹		Physostigmine	57-47-6	100/10,000 ¹	
Mercuric Chloride	7487-94-7	500/10,000 ¹		Physostigmine, Salicylate (1:1)	57-64-7	100/10,000 ¹	
Mercuric Oxide	21908-53-2	500/10,000 ¹		Picrotoxin	124-87-8	500/10,000 ¹	
Methacrylonitrile (Methylacrylonitrile)				Piperidine	110-89-4	1,000	b
(2-Methyl-2-Propenenitrile)	126-98-7	500	b	Potassium Arsenite	10124-50-2	500/10,000 ¹	
Methacryloyl Chloride	920-46-7	100		Potassium Cyanide	151-50-8	100	
Methacryloyloxyethyl Isocyanate	30674-80-7	100		Potassium Silver Cyanide	506-61-6	500	
Methamidophos	10265-92-6	100/10,000 ¹		Promecarb	2631-37-0	500/10,000 ¹	
Methane	74-82-8	10,000	f	Propadiene (1,2-Propadiene)	463-49-0	10,000	f
Methanesulfonyl Fluoride	558-25-8	1,000		Propane	74-98-6	10,000	f
Methidathion	950-37-8	500/10,000 ¹		Propargyl Bromide (3-Bromopropyne)	106-96-7	10	
Methiocarb (Mercaptodimethur)	2032-65-7	500/10,000 ¹		* beta-Propiolactone	57-57-8	500	
Methomyl	16752-77-5	500/10,000 ¹		Propionitrile (Propanenitrile)(Ethyl Cyanide)	107-12-0	500	b
Methoxyethylmercuric Acetate	151-38-2	500/10,000 ¹		Propiophenone, 4'-Amino-Propyl Chloroformate	70-69-9	100/10,000 ¹	
2-Methyl-1-Butene	563-46-2	10,000	g	(Carbonochloridic Acid, Propylester)	109-61-5	500	b
3-Methyl-1-Butene	563-45-1	10,000	f	Propylene (1-Propene)	115-07-1	10,000	f
Methyl 2-Chloroacrylate	80-63-7	500		Propylene Oxide (Methyloxirane)	75-56-9	10,000	b
Methyl Bromide (Bromomethane)	74-83-9	1,000		Propyleneimine (2-Methylaziridine)	75-55-8	10,000	b
Methyl Chloride (Methane, Chloro-)	74-87-3	10,000	a	Propyne (1-Propyne)	74-99-7	10,000	f
Methyl Chloroformate				Prothoate	2275-18-5	100/10,000 ¹	
(Carbonochloridic Acid, Methyl Ester)	79-22-1	500	b	Pyrene	129-00-0	1,000/10,000 ¹	
Methyl Ether (Methane, Oxybis-)	115-10-6	10,000	f	Pyridine, 4-Amino-	504-24-5	500/10,000 ¹	
Methyl Formate (Formic Acid, Methyl Ester)	107-31-3	10,000	g	Pyridine, 4-Nitro-, 1-Oxide	1124-33-0	500/10,000 ¹	
Methyl Hydrazine	60-34-4	500	b	Pyriminil	53558-25-1	100/10,000 ¹	
Methyl Isocyanate (Isocyanatomethane)	624-83-9	500	a,b	Salcomine	14167-18-1	500/10,000 ¹	
Methyl Isothiocyanate	556-61-6	500		* Sarin	107-44-8	10	
Methyl Mercaptan (Methanethiol) (Thiomethanol)	74-93-1	500	b	Selenious Acid	7783-00-8	1,000/10,000 ¹	
Methyl Parathion (Parathion Methyl)	298-00-0	100/10,000 ¹		Semicarbazide Hydrochloride	563-41-7	1,000/10,000 ¹	
Methyl Phosphonic Dichloride	676-97-1	100		Silane	7803-62-5	10,000	f
Methyl Thiocyanate (Thiocyanic Acid, Methyl Ester)	556-64-9	10,000	b	Sodium Arsenate	7631-89-2	1,000/10,000 ¹	
Methyl Vinyl Ketone	78-94-4	10		Sodium Arsenite	7784-46-5	500/10,000 ¹	
Methylamine (Methanamine)	74-89-5	10,000	f	Sodium Azide (Na (N3))	26628-22-8	500	
Methylmercuric Dicyanamide	502-39-6	500/10,000 ¹		Sodium Cadocylate	124-65-2	100/10,000 ¹	
2-Methylpropene (1-Propene, 2-Methyl-)	115-11-7	10,000	f	Sodium Cyanide (Na (CN))	143-33-9	100	
Methyltrichlorosilane (Trichloromethylsilane)	75-79-6	500	b	Sodium Fluoroacetate	62-74-8	10/10,000 ¹	
Metolcarb	1129-41-5	100/10,000 ¹		Sodium Selenate	13410-01-0	100/10,000 ¹	
Mexacarbate	315-18-4	500/10,000 ¹		Sodium Selenite	10102-18-8	100/10,000 ¹	
Mitomycin C	50-07-7	500/10,000 ¹		Sodium Tellurite	10102-20-2	500/10,000 ¹	
Monocrotophos	6923-22-4	10/10,000 ¹		Stannane, Acetoxytriphenyl-	900-95-8	500/10,000 ¹	
Muscimol (5-(Aminomethyl)-3-Isoxazolol)	2763-96-4	500/10,000 ¹		Strychnine	57-24-9	100/10,000 ¹	
* Mustard Gas (2,2'- Dichloroethyl Sulfide)	505-60-2	500		Strychnine, Sulfate	60-41-3	100/10,000 ¹	
Nickel Carbonyl (Nickel Tetracarbonyl)	13463-39-3	1	b	Sulfur Dioxide (Anhydrous)	7446-09-5	500	a,b
Nicotine Sulfate	65-30-5	100/10,000 ¹		Sulfur Tetrafluoride	7783-60-0	100	b
Nitric Acid	7697-37-2	1,000	b	* Sulfuric Acid ²	7664-93-9	1,000	
Nitric Oxide (Nitrogen Monoxide (NO))	10102-43-9	100	b	* Tabun	77-81-6	10	
* Nitrobenzene	98-95-3	10,000		Tellurium Hexafluoride	7783-80-4	100	
Nitrogen Dioxide	10102-44-0	100		Tetrafluoroethylene (Ethene, Tetrafluoro-)	116-14-3	10,000	f
* Nitrogen Mustard (Mechlorethamine)	51-75-2	10		Tetramethyllead (Tetramethylplumbane)	75-74-1	100	b
Norboramide	991-42-4	100/10,000 ¹		Tetramethylsilane (Silane, Tetramethyl-)	75-76-3	10,000	g
Oleum (Fuming Sulfuric Acid) (Sulfuric Acid, mixture with Sulfur Trioxide)	8014-95-7	10,000	e	Tetranitromethane (Methane, Tetranitro-)	509-14-8	500	b
Organorhodium Complex (PMN-82-147)	MIXTURE	10/10,000 ¹		Thallium Sulfate	10031-59-1	100/10,000 ¹	
Ouabain	630-60-4	100/10,000 ¹		Thallos Carbonate (Thallium (1) Carbonate)	6533-73-9	100/10,000 ¹	
Oxamyl	23135-22-0	100/10,000 ¹		Thallos Chloride (Thallium Chloride)	7791-12-0	100/10,000 ¹	
Ozone	10028-15-6	100		Thallos Malonate (Thallium Malonate)	2757-18-8	100/10,000 ¹	
Paraquat Methosulfate	2074-50-2	10/10,000 ¹		Thallos Sulfate	7446-18-6	100/10,000 ¹	
Paraquat (Paraquat Dichloride)	1910-42-5	10/10,000 ¹		Thiocarbazine	2231-57-4	1,000/10,000 ¹	
Paris Green (Cupric Acetoarsenite)	12002-03-8	500/10,000 ¹		Thiofanox	39196-18-4	100/10,000 ¹	
Pentaborane	19624-22-7	500		Thiosemicarbazide	79-19-6	100/10,000 ¹	
Pentadecylamine	2570-26-5	100/10,000 ¹		Thiourea, (2-Chlorophenyl)-	5344-82-1	100/10,000 ¹	
1,3-Pentadiene	504-60-9	10,000	f	Thiourea, (2-Methylphenyl)-	614-78-8	500/10,000 ¹	
Pentane	109-66-0	10,000	g	Titanium Tetrachloride	7550-45-0	100	b
1-Pentene	109-67-1	10,000	g	Toluene-2,6-Diisocyanate			
2-Pentene, (E)-	646-04-8	10,000	g	(1,3-Diisocyanato-2-Methylbenzene) ⁵	91-08-7	100	a
2-Pentene, (Z)-	627-20-3	10,000	g	Toluene-2,4-Diisocyanate			
Peracetic Acid				(2,4-Diisocyanato-1-Methylbenzene) ⁵	584-84-9	500	a
(Ethaneperoxyic Acid) (Peroxyacetic Acid)	79-21-0	500	b	Toluene Diisocyanate (unspecified isomer)			
Perchloromethylmercaptan				(Benzene,1,3-Diisocyanatomethyl-) ⁵	26471-62-5	10,000	a
(Trichloromethanesulfonyl Chloride)	594-42-3	500	b	Triamiphos	1031-47-6	500/10,000 ¹	
Phenol	108-95-2	500/10,000 ¹		Trichloro(Chloromethyl)Silane	1558-25-4	100	
Phenol, 2,2'-Thiobis(4-Chloro-6-Methyl)	4418-66-0	100/10,000 ¹		Trichloro(Dichlorophenyl)Silane	27137-85-5	500	
Phenol, 3-(1-Methylethyl)-, Methylcarbamate)	64-00-6	500/10,000 ¹		Trichlorosilane (Silane, Trichloro-)	10025-78-2	10,000	g
Phenoxarsine, 10, 10' - Oxydi-	58-36-6	500/10,000 ¹		Triethoxysilane	998-30-1	500	
* Phenylidichloroarsine				Trifluorochloroethylene	79-38-9	10,000	f
(Dichlorophenylarsine) (Lewisite Variant)	696-28-6	500		Trimethylamine (Methanamine, N,N-dimethyl-)	75-50-3	10,000	f
				Trimethylchlorosilane (Chlorotrimethylsilane)	75-77-4	1,000	b
				Trimethylolpropane Phosphite	824-11-3	100/10,000 ¹	

CalIARP PROGRAM REGULATED SUBSTANCES LIST

CHEMICAL NAME	CAS #	TQ	Listing
Trimethyltin Chloride	1066-45-1	500/10,000 ¹	
Triphenyltin Chloride	639-58-7	500/10,000 ¹	
* Tris(2-Chloroethyl)Amine	555-77-1	100	
Valinomycin	2001-95-8	1,000/10,000 ¹	
Vanadium Pentoxide	1314-62-1	100/10,000 ¹	
Vinyl Acetate Monomer (Vinyl Acetate) (Acetic Acid, Ethenyl Ester)	108-05-4	1,000	b
Vinyl Acetylene (1-Buten-3-Yne)	689-97-4	10,000	f
Vinyl Chloride (Ethene, Chloro-)	75-01-4	10,000	a,f
Vinyl Ethyl Ether (Ethene, Ethoxy-)	109-92-2	10,000	g
Vinyl Fluoride (Ethene, Fluoro-)	75-02-5	10,000	f
Vinyl Methyl Ether (Ethene, Methoxy-)	107-25-5	10,000	f
Vinylidene Chloride (Ethene, 1,1-Dichloro-)	75-35-4	10,000	g
Vinylidene Fluoride (Ethene, 1,1-Difluoro-)	75-38-7	10,000	f
Warfarin	81-81-2	500/10,000 ¹	
Warfarin Sodium (Coumadin) (Sodium salt)	129-06-6	100/10,000 ¹	
Xylylene Dichloride	28347-13-9	100/10,000 ¹	
Zinc, Dichloro(4,4-Dimethyl-5(((Methylamino) Carbonyl)Oxy)Imino)Pentanenitrile)-, (T-4)-	58270-08-9	100/10,000 ¹	
Zinc Phosphide	1314-84-7	500	

* Substances delisted failing physical criteria test and relisted pursuant to health impacts.

¹ These extremely hazardous substances are solids. The lesser quantity listed applies only if in powdered form and with a particle size of less than 100 microns; or if handled in solution or in molten form; or the substance has an NFPA rating for reactivity of 2, 3, or 4. Otherwise, a 10,000 pound threshold applies.

² Appropriate synonyms or mixtures of regulated substances with the same CAS number are also regulated, e.g., anhydrous ammonia, formalin.

³ Sulfuric acid is a State Regulated Substance only under the following conditions:

a. If concentrated with greater than 100 pounds of sulfur trioxide or the acid meets the definition of oleum. (The threshold for sulfur trioxide is 100 pounds.) (The threshold for oleum is 10,000 pounds.)

b. If in a container with flammable hydrocarbons (flash point < 73° F).

⁴ Hydroquinone is exempt in crystalline form.

⁵ The mixture exemption in Section 2770.2(b)(1) does not apply to the Substance.

LEGEND: Basis for Listing:

- a. Mandated for listing by Congress.
- b. On EHS list, vapor pressure 10 mmHg or greater.
- c. Toxic gas.
- d. Toxicity of hydrogen chloride, potential to release hydrogen chloride, and history of accidents.
- e. Toxicity of sulfur trioxide and sulfuric acid, potential to release sulfur trioxide, and history of accidents.
- f. Flammable gas.
- g. Volatile flammable liquid.

III. HAZARDOUS WASTE SECTION

To be completed by all persons or businesses that generate, store, handle or dispose of hazardous waste.

Be advised that appropriate signatures must be provided on forms.

This section includes:

- o **HAZARDOUS WASTE GENERATOR FORM (LA County)**

To be completed by businesses which generator wastes classified as hazardous under Federal Law (RCRA or the Resource Conservation Recovery Act) and/or State Law (Chapter 6.5 of the Health and Safety Code).

Note: RCRA hazardous wastes are wastes regulated under Federal and State law. Non-RCRA hazardous wastes (such as waste oil) are wastes regulated only under State law.

INSTRUCTIONS FOR THE UNIFIED PROGRAM (UP) FORM
HAZARDOUS WASTE GENERATOR PAGE (LA COUNTY)

The waste generator page is used to identify your generator status and all waste streams generated at your facility.

1. **FACILITY ID NUMBER** Leave this blank. The Certified Unified Program Agency (CUPA) assigns this number that identifies your facility.
2. **EPA ID #** If you generate, recycle, or treat hazardous waste, enter your facility's 12-character U.S. Environmental Protection Agency (U.S. EPA) or California Identification number. For facilities in California, the number usually starts with the letters "CA". If you do not have a number, contact the Department of Toxic Substances Control (DTSC) at (916) 324-1781, (800) 61-TOXIC or (800) 61-86942, to obtain one.
3. **BUSINESS NAME** Enter the full legal name of the business.
- 133b. **NUMBER OF EMPLOYEES** Enter the total number of employees currently working at your facility.
- A. **TYPE OF GENERATOR** Check the box that most closely apply to your facility. Check no more than one box per column.

RCRA GENERATOR Check the box that best describes the amount of Federal listed and regulated hazardous waste generated by your facility. Leave blank if your facility doesn't generate hazardous waste regulated under Subtitle C of RCRA (the Resource Conservation and Recovery Act of 1976).

NON - RCRA GENERATOR Check the box that that best describes the amount of California-only listed and regulated hazardous waste generated by your facility. Leave blank if your facility doesn't generate non-RCRA hazardous waste.

Boxes include:
 - ◆ Large Quantity Generator (greater than 1000 kg per Hazardous Waste per month)
 - ◆ Small Quantity Generator (less than 1000 kg per month but greater than 100 kg Hazardous Waste per month)
 - ◆ Conditionally Exempt Small Quantity Generator (less than 100 kg Hazardous Waste per month)

Note:

 1. 1 kg = 2.2 lbs.
 2. For Acutely Hazardous Waste or Extremely Hazardous Waste, facilities that generate greater than 1 kg per month are considered Large Quantity Generators and facilities that generate less are considered Conditionally Exempt Small Quantity Generators.
- B. **PROCESS** Briefly describe all processes that generate hazardous waste(s) at your facility. Example: plating, machining, painting, etc.
- C. **WASTE DESCRIPTION** Describe the type of waste that is generated from each process listed. Example: heavy metal sludge, waste oil, etc.
- D. **WASTE ID** List the Waste ID #'s for all RCRA and non-RCRA hazardous waste. Refer to 22 CCR § 66261.126.
- E. **AMOUNT PER YEAR** List the amount of hazardous waste generated from each separate process in kilograms, pounds, gallons, or tons per year.
- F. **STORAGE METHOD** Enter the letter that corresponds to the type of storage used at your facility for each of the hazardous waste streams listed.
 - A = Drums
 - B = Underground Tank
 - C = Aboveground Tank
 - D = Waste Pile
 - E = In Process Equipment
- G. **DISPOSAL METHOD** Enter the letter in the space provided to describe the disposal method used at your facility for each of the hazardous waste streams listed.
 - A = Treatment Onsite
 - B = Treatment Offsite
 - C = Recycle Onsite
 - D = Recycle Offsite
- H. **OWNER/OPERATOR NAME** Indicate the name of the person who signed the form.
- I. **OWNER/OPERATOR TITLE** Indicate the title of the person who signed the form.
- J. **DATE** Indicate the date the form was signed.

UNIFIED PROGRAM (UP) FORM HAZARDOUS WASTE GENERATOR

PAGE OF

BUSINESS NAME: 3

FACILITY ID # 1 NO. OF EMPLOYEES: 133b EPA ID # 2

I. TYPE OF GENERATOR

A

PLEASE CHECK THE FOLLOWING BOXES THAT APPLY (Check no more than one box per column)

	RCRA GENERATOR (FEDERAL WASTE)	NON-RCRA GENERATOR (CALIFORNIA ONLY WASTE)
LARGE QUANTITY GENERATOR (>1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
SMALL QUANTITY GENERATOR (>100 KG BUT <1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR (< 100 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>

II. WASTE STREAM IDENTIFICATION

PLEASE COMPLETE THE TABLE BELOW. SEE INSTRUCTIONS FOR CODES AND EXPLANATION.

PROCESS	B	WASTE DESCRIPTION	C	WASTE ID	D	AMOUNT PER YEAR	E	STORAGE METHOD	F	DISPOSAL METHOD	G

I certify that the information provided herein is true and accurate to the best of my knowledge.

OWNER/OPERATOR NAME	H	OWNER/OPERATOR TITLE	I
OWNER/OPERATOR SIGNATURE		DATE	J

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT INSPECTOR

5. Sample of Completed Unified Form (Business Plan) - Los Angeles County Fire Department – Health HazMat

SAMPLE

UNIFIED PROGRAM (UP) FORMS



This sample consolidated Contingency Plan and Inventory is provided to assist small businesses in accurately completing the Unified Program Forms. The consolidated Contingency Plan and Inventory form (OES 2731) should be completed to reflect your particular business operation. The suggested answers in this sample document are provided for reference only.

SAMPLE

UNIFIED PROGRAM (UP) FORM BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID #		EPA ID # (Hazardous Waste Only)	2
Official use		CAL 00000000	

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)	3
My company	

II. ACTIVITIES DECLARATION

**NOTE: If you check YES to any part of this list,
please submit the Business Owner/Operator Identification page.**

Does your facility...	If Yes, please complete these pages of the UP FORM....
-----------------------	--

A. HAZARDOUS MATERIALS Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO 4	4 HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION 4 CONSOLIDATED CONTINGENCY PLAN (Section I and Site Map(s)) 4 TRAINING PLAN
--	---	--

B. UNDERGROUND STORAGE TANKS (USTs) 1. Own or operate underground storage tanks? 2. Intend to upgrade existing or install new USTs? 3. Need to report closing a UST?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 5 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 6 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 7	4 UST FACILITY 4 UST TANK (one page per tank) 4 UST FACILITY 4 UST TANK (one per tank) 4 UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) 4 UST TANK (closure portion –one page per tank)
--	---	--

C. ABOVE GROUND PETROLEUM STORAGE TANKS (ASTs) Own or operate ASTs above these thresholds: ---any tank capacity is greater than 660 gallons, or ---the total capacity for the facility is greater than 1,320 gallons?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 8	NO FORM REQUIRED TO CUPAs
---	---	---------------------------

D. HAZARDOUS WASTE 1. Generate hazardous waste? 2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)? 3. Treat hazardous waste on site? 4. Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)? 5. Consolidate hazardous waste generated at a remote site? 6. Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO 9 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 10 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 11 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 12 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 13 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 14	4 EPA ID NUMBER – provide at the top of this page. 4 As a generator, answer YES to Item E2b and complete Waste Generator Form. 4 RECYCLABLE MATERIALS REPORT 4 ONSITE HAZARDOUS WASTE TREATMENT – FACILITY 4 ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit) 4 CERTIFICATION OF FINANCIAL ASSURANCE 4 REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION 4 HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
---	---	---

E. LOCAL REQUIREMENTS 15

1. REGULATED SUBSTANCES		
Have Regulated Substances (RS) including Extremely Hazardous Substances (EHS) stored on site at greater than the threshold planning quantities established by the California Accidental Release Program (Cal ARP) ?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 15a	In addition to Hazardous Materials requirements, complete: 4 Regulated Substance Registration 4 Risk Management Plan (when required)

2. OTHER REQUIREMENTS		
a. Have hazardous materials stored on site at or above a threshold amount established by a CUPA's or PA's local ordinance?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 15b	4 Consult local CUPA or PA for added reporting requirements.
b. Required by a CUPA or PA to provide other information?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 15c	4 Waste Generator Form (LA County)

OFFICIAL USE ONLY	UP Form	HW	HM	ARP	AST	UST	TP	CUPA	PA
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SAMPLE

UNIFIED PROGRAM (UP) FORM BUSINESS OWNER/OPERATOR IDENTIFICATION (Form 2730)

NEW BUSINESS OUT OF BUSINESS REVISE/UPDATE (EFFECTIVE / /) PAGE OF

I. IDENTIFICATION

FACILITY ID# Official use only								1 BEGINNING DATE ¹⁰⁰ 2003/01/01	ENDING DATE ¹⁰¹ 2003/12/31
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) ³ My Company								BUSINESS PHONE ¹⁰² (000) 000-0000	
BUSINESS SITE ADDRESS ¹⁰³ 123 Any Street									
CITY ¹⁰⁴ Any Town							CA ¹⁰⁴	ZIP CODE ¹⁰⁵ 90000	
DUN & BRADSTREET ¹⁰⁶							SIC CODE (4 digit #) ¹⁰⁷ 0000		
COUNTY LOS ANGELES ¹⁰⁸							UNINCORPORATED <input type="checkbox"/> Yes <input type="checkbox"/> No ^{133a.}		
BUSINESS OPERATOR NAME ¹⁰⁹ John Smith								BUSINESS OPERATOR PHONE ¹¹⁰ (111) 111-1111	

II. BUSINESS OWNER

OWNER NAME ¹¹¹ John Smith	OWNER PHONE ¹¹² (111) 111-1111
OWNER MAILING ADDRESS ¹¹³ 456 Other Street	
CITY ¹¹⁴ Any Town	STATE CA ¹¹⁵ ZIP CODE ¹¹⁶ 90000

III. ENVIRONMENTAL CONTACT

CONTACT NAME ¹¹⁷ S.A.A.	CONTACT PHONE ¹¹⁸ S.A.A.
CONTACT MAILING ADDRESS ¹¹⁹ S.A.A.	
CITY ¹²⁰ S.A.A.	STATE CA ¹²¹ ZIP CODE ¹²² S.A.A.

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME ¹²³ John Smith	NAME ¹²⁸ Jane Smith
TITLE ¹²⁴ Owner and Operator	TITLE ¹²⁹ Manager
BUSINESS PHONE ¹²⁵ (000) 000-0000	BUSINESS PHONE ¹³⁰ (000) 000-0000
24-HOUR PHONE ¹²⁶ (111) 111-1111	24-HOUR PHONE ¹³¹ (333) 333-3333
PAGER # ¹²⁷ (222) 222-2222	PAGER # ¹³² (444) 444-4444

V. ADDITIONAL LOCALLY COLLECTED INFORMATION

NUMBER OF EMPLOYEES # of employees here ^{133b}	FEDERAL TAX IDENTIFICATION NUMBER Federal Tax ID here ^{133c}		
MAILING/ BILLING INFORMATION			
ADDRESS ^{133d} 123 Any Street	CITY ^{133e} Any Town	STATE ^{133f} CA	ZIP CODE ^{133g} 90000
Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.			
SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE Signature Here		DATE ¹³⁴ 2003/01/01	NAME OF DOCUMENT PREPARER ¹³⁵ John Smith
NAME OF SIGNER (print) ¹³⁶ John Smith		TITLE OF SIGNER ¹³⁷ Owner and Operator	

OFFICIAL USE ONLY	UP Form	HW	HM	ARP	AST	UST	TP	CUPA	PA
INSPECTOR	DISTRICT	DATE OF INSPECTION	DIVISION	BATTALION	STATION				

SAMPLE

Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

COVER PAGE

FACILITY IDENTIFICATION			
BUSINESS NAME		3	FACILITY ID # 1
My Company			Official use
SITE ADDRESS	103	CITY	104
123 Any Street		Any Town	ZIP CODE 105
			90000

The Consolidated Contingency Plan provides businesses a format to comply with the emergency planning requirements of the following three written hazardous materials emergency response plans required in California:

- ⊖ Hazardous Materials Business Plan (HSC Chapter 6.95 Section 25504 (b) and 19 CCR Sections 2729-2732),
- ⊖ Hazardous Waste Generator Contingency Plan (22 CCR Section 66264.52), and,
- ⊖ Underground Storage Tank Emergency Response Plan and Monitoring Program (23 CCR Sections 2632 and 2641).

This format is designed to reduce duplication in the preparation and use of emergency response plans at the same facility, and to improve the coordination between facility response personnel and local, state and federal emergency responders during an emergency. Use the chart below to determine which sections of the Consolidated Contingency Plan need to be completed for your facility. If you are unsure as to which programs your facility is subject to, refer to the Business Activities Page.

PROGRAMS	SECTION(S) TO BE COMPLETED
Hazardous Materials Business Plan (HMBP)	Cover Page, Section I, and Site Map(s)
Hazardous Waste Generator (HWG)	Cover Page, Section I, and Site Map(s)
Underground Storage Tank (UST)	Cover Page, Sections I and II, and Site Map(s)
HMBP, HWG, UST	Cover Page, Sections I and II, and Site Map(s)

A copy of the plan shall be submitted to your local CUPA and at least one copy of the plan shall be maintained at the facility for use in the event of an emergency and for inspection by the local agency. Describe below where a copy of your Contingency Plan, including the hazardous material inventories and Site Map(s), is located at your business:

A copy of the Contingency Plan is kept on file in the company office.

PLAN CERTIFICATION

I certify under penalty of law that I have personally examined and I am familiar with the information provided by this plan and to the best of my knowledge the information is accurate, complete, and true.

Printed Name of Owner/ Operator	Title of Owner/Operator
John Smith	Owner and Operator
Signature of Owner/ Operator	Date
Signature here	2003/01/01

We appreciate the effort of local businesses in completing these plans and will assist in every possible way. If you have any questions, please contact your local CUPA or PA.

OFFICIAL USE ONLY			DATE RECEIVED		REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA	

SAMPLE

Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

I. FACILITY IDENTIFICATION						
BUSINESS NAME			3	FACILITY ID # 1		
My Company				Official use		
SITE ADDRESS		103	CITY	104	ZIP CODE 105	
123 Any Street			Any Town		90000	
II. EMERGENCY CONTACTS						
PRIMARY			SECONDARY			
NAME	123	NAME		128		
John Smith		Jane Smith				
TITLE	124	TITLE		129		
Owner and Operator		Manager				
BUSINESS PHONE	125	BUSINESS PHONE		130		
(000) 000-0000		(000) 000-0000				
24-HOUR PHONE	126	24-HOUR PHONE		131		
(111) 111-1111		(333) 333-3333				
PAGER #	127	PAGER #		132		
(222) 222-2222		(444) 444-4444				
III. EMERGENCY RESPONSE PLANS AND PROCEDURES						
A. Notifications						
Your business is required by State Law to provide an immediate verbal report of any release or threatened release of a hazardous material to local fire emergency response personnel, this Unified Program Agency (CUPA or PA), and the Office of Emergency Services. If you have a release or threatened release of hazardous materials, immediately call: FIRE/PARAMEDICS/POLICE/SHERIFF PHONE: 911						
AFTER the local emergency response personnel are notified, you shall then notify this Unified Program Agency and the Office of Emergency Services. LA. Co. Fire Dept. H.H.M.D. (323) 890-4317 State Office of Emergency Service: (800) 852-7550 or (916) 262-1621 National Response Center: (800) 424-8802						
Information to be provided during Notification:						
⊞ Your Name and the Telephone Number from where you are calling.						
⊞ Exact address of the release or threatened release.						
⊞ Date, time, cause, and type of incident (e.g. fire, air release, spill etc.)						
⊞ Material and quantity of the release, to the extent known.						
⊞ Current condition of the facility.						
⊞ Extent of injuries, if any.						
⊞ Possible hazards to public health and/ or the environment outside of the facility.						
B. Emergency Medical Facility						
List the local emergency medical facility that will be used by your business in the event of an accident or injury caused by a release or threatened release of hazardous material						
HOSPITAL/CLINIC:			PHONE NO:			
XYZ Medical Center			(911) 911-9111			
ADDRESS:						
911 Code Blue Street						
CITY:			ZIP CODE:			
Healthy Town			90000			
OFFICIAL USE ONLY			DATE RECEIVED		REVIEWED BY	
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA

SAMPLE
Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

C. Private Emergency Response	
DOES YOUR BUSINESS HAVE A PRIVATE ON-SITE EMERGENCY RESPONSE TEAM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, provide an attachment that describes what policies and procedures your business will follow to notify your on-site emergency response team in the event of a release or threatened release of hazardous materials.	
CLEANUP/DISPOSAL CONTRACTOR	
List the contractor that will provide cleanup services in the event of a release.	
NAME OF CONTRACTOR: Cleanup Incorporated	PHONE NO: (777) 777-7777
ADDRESS: 555 Any Street.	
CITY: Any Town	ZIP CODE: 90000
D. Arrangements With Emergency Responders	
If you have made special (i.e. contractual) arrangements with any police department, fire department, hospital, contractor, or State or local emergency response team to coordinate emergency services, describe those arrangements on the lines below: My company has made arrangements with our medical provider, XYZ Medical Center to provide medical Care in the event of emergencies.	
E. Evacuation Plan	
1. The following alarm signal(s) will be used to begin evacuation of the facility (<i>check all which apply</i>): <input checked="" type="checkbox"/> Verbal <input checked="" type="checkbox"/> Telephone (<i>including cellular</i>) <input checked="" type="checkbox"/> Alarm System <input type="checkbox"/> Public Address System <input checked="" type="checkbox"/> Intercom <input type="checkbox"/> Pagers <input type="checkbox"/> Portable Radio <input checked="" type="checkbox"/> Other (<i>specify</i>): Two-way radios.	
2. <input checked="" type="checkbox"/> Evacuation map is prominently displayed throughout the facility.	
3. <input checked="" type="checkbox"/> Individual(s) responsible for coordinating evacuation including spreading the alarm and confirming the business has been evacuated: Individual responsible for coordinating the evacuation will meet and wait outside on the parking lot area for roll call.	
F. Earthquake Vulnerability	
Identify areas of the facility where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion. <input checked="" type="checkbox"/> Hazardous Waste/ Hazardous Materials Storage Areas <input checked="" type="checkbox"/> Production Floor <input type="checkbox"/> Process Lines <input type="checkbox"/> Bench/ Lab <input type="checkbox"/> Waste Treatment <input type="checkbox"/> Other:	
Identify mechanical systems where releases could occur or would require immediate inspection or isolation because of the vulnerability to earthquake related ground motion. <input type="checkbox"/> Utilities <input type="checkbox"/> Sprinkler Systems <input type="checkbox"/> Cabinets <input type="checkbox"/> Shelves <input type="checkbox"/> Racks <input type="checkbox"/> Pressure Vessels <input checked="" type="checkbox"/> Gas Cylinders <input type="checkbox"/> Tanks <input type="checkbox"/> Process Piping <input type="checkbox"/> Shutoff Valves <input type="checkbox"/> Other:	

SAMPLE
Unified Program (UP) Form
CONSOLIDATED CONTINGENCY PLAN

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

G.	Emergency Procedures
Briefly describe your business standard operating procedures in the event of a release or threatened release of hazardous materials:	
1.	PREVENTION (prevent the hazard) - Describe the kinds of hazards associated with the hazardous materials present at your facility. What actions would your business take to prevent these hazards from occurring? You may include a discussion of safety and storage procedures.
The kinds of hazards associated with the hazardous materials in my facility are spills and leaks. Containers of hazardous materials and hazardous wastes are stored with secondary containment. Containers are stored away from drains, in leak-proof containers with tight fitting lids, and held until lawfully discarded.	
Incompatible materials and wastes are stored separately.	
Employees are trained on business plan measures, and are trained to handle materials using personal protective equipment such as gloves and safety glasses.	
2.	MITIGATION (reduce the hazard) – Describe what is done to lessen the harm or the damage to person(s), property, or the environment, and prevent what has occurred from getting worse or spreading. What is your immediate response to a leak, spill, fire, explosion, or airborne release at your business?
Small spills are spills of minimal quantities that are contained and mitigated onsite by business employees.	
The response to small spills is the following: Evacuate any unnecessary employees from the area of the spill.	
Using absorbent materials, make sure that spilled material is contained and prevented from contaminating the ground, soil, water, or discharge off the property.	
Large spills are spills of larger quantities that the business is unable to safely contain and mitigate without assistance and involve quantities of spilled materials that require reporting to the Fire Department. The response to large spills is the following: Immediately notify employees to evacuate and call 911.	
3.	ABATEMENT (remove the hazard) – Describe what you would do to stop and remove the hazard. How do you handle the complete process of stopping a release, cleaning up, and disposing of released materials at your facility?
The response to a limited spill is the following: Employees involved in the clean up of a spill will wear protective rubber gloves, safety glasses and additional protective clothing. Absorbed material will be placed in a leak-proof container that is compatible with the waste. The container will have a tight-fitting lid and be properly labeled as hazardous waste. The waste will be lawfully disposed as hazardous waste.	
Necessary notifications shall be made to the Health Hazardous Materials Division of the Los Angeles County Fire Department and to the State Office of Emergency Services (OES).	

SAMPLE

Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

SECTION I: BUSINESS PLAN AND CONTINGENCY PLAN

IV. Emergency Equipment

22 CCR, Section 66265.52(e) [as referenced by Section 66262.34(a)(3)] requires that emergency equipment at the facility be listed. Completion of the following Emergency Equipment Inventory Table meets this requirement.

EMERGENCY EQUIPMENT INVENTORY TABLE

1. Equipment Category	2. Equipment Type	3. Location *	4. Description**
Personal Protective, Equipment, Safety Equipment, and First Aid Equipment	<input type="checkbox"/> Cartridge Respirators		
	<input type="checkbox"/> Chemical Monitoring Equipment (<i>describe</i>)		
	<input type="checkbox"/> Chemical Protective Aprons/Coats		
	<input type="checkbox"/> Chemical Protective Boots		
	<input checked="" type="checkbox"/> Chemical Protective Gloves	8-E	Rubber gloves
	<input type="checkbox"/> Chemical Protective Suits (<i>describe</i>)		
	<input type="checkbox"/> Face Shields		
	<input checked="" type="checkbox"/> First Aid Kits/Stations (<i>describe</i>)	7-C / 8-H	Two first aid kits available
	<input type="checkbox"/> Hard Hats		
	<input type="checkbox"/> Plumbed Eye Wash Stations		
	<input checked="" type="checkbox"/> Portable Eye Wash Kits (<i>i.e. bottle type</i>)	8-C	Bottle type affixed to wall.
	<input type="checkbox"/> Respirator Cartridges (<i>describe</i>)		
	<input checked="" type="checkbox"/> Safety Glasses/Splash Goggles	8-E	Safety glasses for employees
<input type="checkbox"/> Safety Showers			
<input type="checkbox"/> Self-Contained Breathing Apparatuses (SCBA)			
	<input checked="" type="checkbox"/> Other (<i>describe</i>)		Steel toe shoes
Fire Extinguishing Systems	<input type="checkbox"/> Automatic Fire Sptinkler Systems		
	<input type="checkbox"/> Fire Alarm Boxes/Stations		
	<input checked="" type="checkbox"/> Fire Extinguisher Systems (<i>describe</i>)	3E4C4H7C7G	Five fire extinguishers on site
	<input type="checkbox"/> Other (<i>describe</i>)		
Spill Control Equipment and Decontamination Equipment	<input checked="" type="checkbox"/> Absorbents (<i>describe</i>)	4-F	25 Pound absorbent bags
	<input type="checkbox"/> Berms/Dikes (<i>describe</i>)		
	<input type="checkbox"/> Decontamination Equipment (<i>describe</i>)		
	<input type="checkbox"/> Emergency Tanks (<i>describe</i>)		
	<input type="checkbox"/> Exhaust Hoods		
	<input type="checkbox"/> Gas Cylinders Leak Repair Kits (<i>describe</i>)		
	<input checked="" type="checkbox"/> Neutralizers (<i>describe</i>)	4-F	Baking soda available for acid.
	<input type="checkbox"/> Overpack Drums		
	<input type="checkbox"/> Sumps (<i>describe</i>)		
	<input checked="" type="checkbox"/> Other (<i>describe</i>)	3-G	Three stage clarifier collects run-off
Communications and Alarm Systems	<input type="checkbox"/> Chemical Alarms (<i>describe</i>)		
	<input checked="" type="checkbox"/> Intercoms/ PA Systems	10-E	Public announcement installed
	<input checked="" type="checkbox"/> Portable Radios	10-E	Two-way radios
	<input checked="" type="checkbox"/> Telephones	4-H	Telephones and cellular phones
	<input type="checkbox"/> Underground Tank Leak Detection Monitors		
	<input type="checkbox"/> Other (<i>describe</i>)		
Additional Equipment (Use Additional Pages if Needed.)			

* Use the Location Codes (LC) from the Site Map(s) prepared for your Contingency Plan.

** Describe the equipment and its capabilities. If applicable, specify any testing/maintenance procedures/intervals. Attach additional pages, numbered appropriately, if needed.

SAMPLE

Unified Program (UP) Form

CONSOLIDATED CONTINGENCY PLAN

SITE MAP

A site plan and storage map must be included with your Contingency Plan. For relatively small facilities, these documents may be combined into one drawing. Since these drawings are intended for use in emergency response situations, larger facilities (*generally those with complex and/or multiple buildings*) should provide an overall site plan and a separate storage map for each building/storage area. A blank Facility Site Map has been provided on the reverse side of this page. You may complete that page or attach any other drawing(s) which contain(s) the information required below.

1. **Site Plan:** This drawing shall contain, at a minimum, the following information:

- a. Site Orientation (north, south, etc.);
- b. Approximate scale (*e.g. "1 inch = 10 feet"*);
- c. Date the map was drawn;
- d. Locations of all buildings and other structures;
- e. Parking lots and internal roads;
- f. Hazardous materials loading/unloading areas;
- g. Outside hazardous materials storage or use areas;
- h. Storm drain and sanitary sewer drain inlets;
- i. Wells for monitoring of underground tank systems;
- j. Primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas;
- k. Adjacent property use;
- l. Locations and names of adjacent streets and alleys;
- m. Access and egress points and roads.

2. **Storage Map(s):** The map(s) shall contain, at a minimum, the following information:

- a. General purpose of each section/area within each building (*e.g. "Office Area", "Manufacturing Area", etc.*);
- b. Location of each hazardous material/waste storage, dispensing, use, or handling area (*e.g. individual underground tanks, aboveground tanks, storage rooms, paint booths, etc.*). Each area shall be identified by a unique location code number, letter, or name (*e.g. "1", "2", "3", "A", "B", "C", etc.*);
- c. Entrances to and exits from each building and hazardous material/waste room/area;
- d. Location of each utility emergency shut-off point (*i.e. gas, water, electric.*);
- e. Location of each monitoring system control panel (*e.g. underground tank monitoring, toxic gas monitoring, etc.*).

3. **Map Legend**

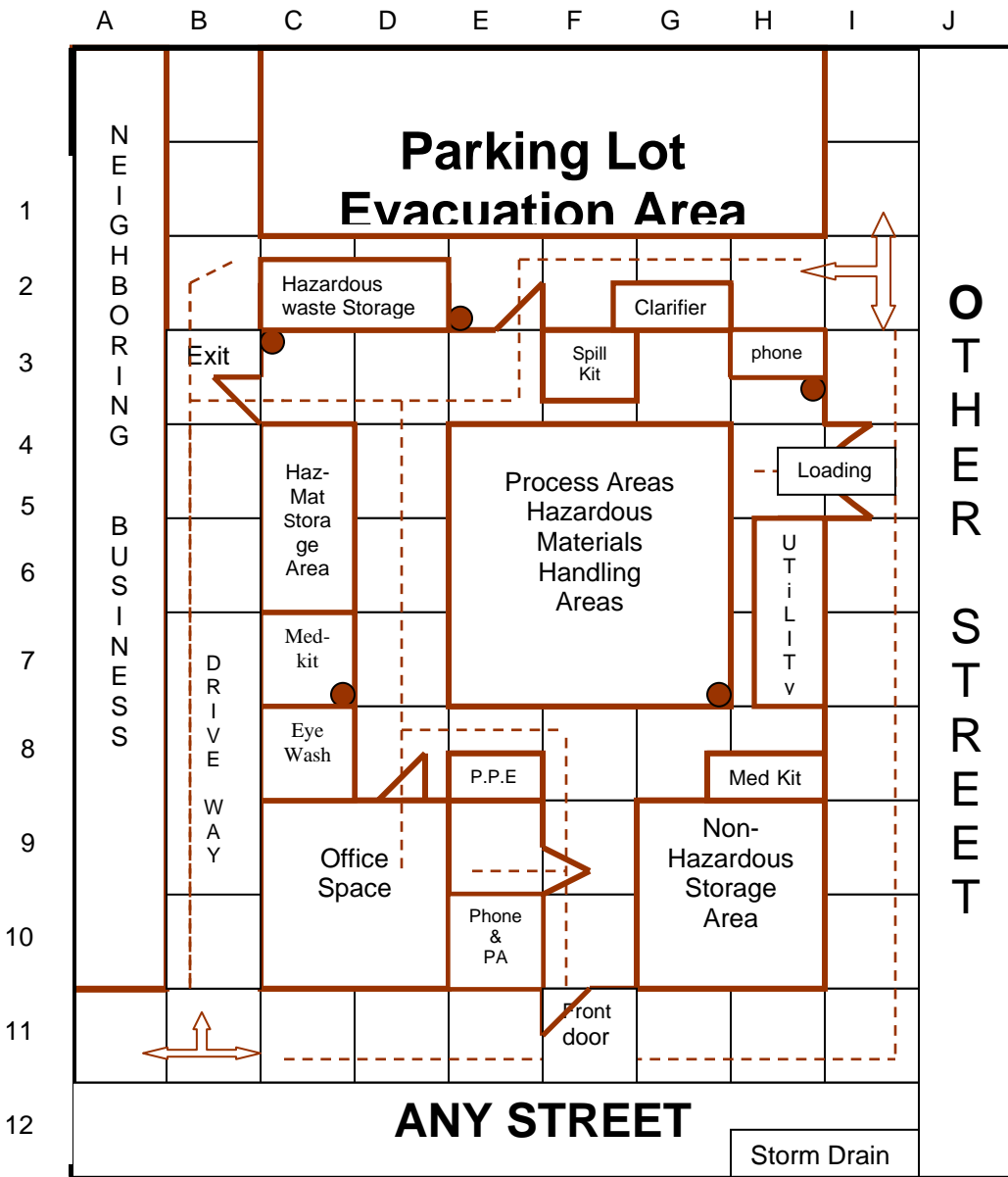
Item and/or Description	Location Code (LC)
Hazardous materials storage areas.	5-C and 6-C
Hazardous waste storage areas.	3-C and 3-D
Hazardous materials handling areas.	5-EFG, 6-EFG, and 7-EFG
Fire extinguishers.	3-E, 4-C, 4-H, 7-C and 7-G
Spill kit.	4-F
Clarifier.	3-G
Communication equipment.	10-E and 4-H
P.P.E.	8-E
Eye wash.	8-C
Emergency exits.	4-B and 3-F
Loading area.	5-I
Parking lot / Evacuation area.	1-CDEFGH and 2-CDEFGH
First Aid kit.	7-C and 8-H

SAMPLE

Unified Program (UP) Form CONSOLIDATED CONTINGENCY PLAN

SITE MAP

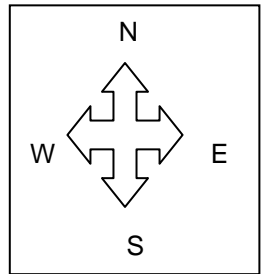
BUSINESS NAME My Company			
SITE ADDRESS 123 Any Street	103	CITY 104 Any Town	ZIP CODE 105 90000
DATE MAP DRAWN 07-01-00	MAP # 1	FACILITY ID # I. Official use only	106



- For Site Map
- Scale of Map
 - Loading Areas
 - Parking Lots
 - Internal Roads
 - Storm and Sewer Drains
 - Adjacent Property Use
 - Locations and Names of Adjacent Streets and Alleys
 - Access and Egress Points and Roads
 - Primary and Alternate Evacuation

● Fire Extinguisher

Scale:
1" = 10 Ft.



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SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS WASTE GENERATOR

PAGE OF

BUSINESS NAME: My Company		3
FACILITY ID # Official Use Only	NO. OF EMPLOYEES: # here.	EPA ID # CAL 00000000

I. TYPE OF GENERATOR

PLEASE CHECK THE FOLLOWING BOXES THAT APPLY (Check no more than one box per column)

	RCRA GENERATOR (FEDERAL WASTE)	NON-RCRA GENERATOR (CALIFORNIA WASTE ONLY)
LARGE QUANTITY GENERATOR (>1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
SMALL QUANTITY GENERATOR (>100 KG BUT <1000 KG HAZARDOUS WASTE PER MONTH)	<input type="checkbox"/>	<input type="checkbox"/>
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR (< 100 KG HAZARDOUS WASTE PER MONTH)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

II. WASTE STREAM IDENTIFICATION

PLEASE COMPLETE THE TABLE BELOW. SEE INSTRUCTIONS FOR CODES AND EXPLANATION.

PROCESS	WASTE DESCRIPTION	WASTE ID	AMOUNT PER YEAR	STORAGE METHOD	DISPOSAL METHOD
Oil change	Waste oil	221	1000	A	D
Radiator flush	Waste coolant	132	110	A	D
Aqueous cleaning	Aqueous washer solution	134	40	A	D

I certify that the information provided herein is true and accurate to the best of my knowledge.

OWNER/OPERATOR NAME John Smith	H	OWNER/OPERATOR TITLE Owner and Operator	I
OWNER/OPERATOR SIGNATURE Signature here		DATE 2003/01/01	J

OFFICIAL USE ONLY	DATE RECEIVED	REVIEWED BY
CUPA	PA	DISTRICT
		INSPECTOR

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3											
My Company											
CHEMICAL LOCATION 201						CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202					
West interior wall of property						<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
FACILITY ID #				MAP# (optional) 203				GRID# (optional) 204			
				1				5-C and 6-C			

II. CHEMICAL INFORMATION

CHEMICAL NAME 205						TRADE SECRET <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 206								
Petroleum Lubricating Oil						If Subject to EPCRA, refer to instructions								
COMMON NAME 207						EHS* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 208								
Motor Oil 10W-40														
CAS# 209						*If EHS is "Yes", all amounts below must be in lbs.								
N/A														
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) H-1, F-1, R-0 210														
HAZARDOUS MATERIAL TYPE (Check one item only) 211						RADIOACTIVE <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 212			CURIES N/A 213					
<input type="checkbox"/> a. PURE <input checked="" type="checkbox"/> b. MIXTURE <input type="checkbox"/> c. WASTE														
PHYSICAL STATE (Check one item only) 214						LARGEST CONTAINER 55 215								
<input type="checkbox"/> a. SOLID <input checked="" type="checkbox"/> b. LIQUID <input type="checkbox"/> c. GAS														
FED HAZARD CATEGORIES (Check all that apply) 216														
<input type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input checked="" type="checkbox"/> e. CHRONIC HEALTH														
AVERAGE DAILY AMOUNT 217			MAXIMUM DAILY AMOUNT 218			ANNUAL WASTE AMOUNT 219			STATE WASTE CODE 220					
55			110			N/A			N/A					
UNITS* (Check one item only) 221						DAYS ON SITE: 222								
<input checked="" type="checkbox"/> a. GALLONS <input type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS						365								
* If EHS, amount must be in pounds.														
STORAGE CONTAINER 223														
<input type="checkbox"/> a. ABOVE GROUND TANK			<input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM			<input type="checkbox"/> i. FIBER DRUM			<input type="checkbox"/> m. GLASS BOTTLE			<input type="checkbox"/> q. RAIL CAR		
<input type="checkbox"/> b. UNDERGROUND TANK			<input type="checkbox"/> f. CAN			<input type="checkbox"/> j. BAG			<input type="checkbox"/> n. PLASTIC BOTTLE			<input type="checkbox"/> r. OTHER		
<input type="checkbox"/> c. TANK INSIDE BUILDING			<input type="checkbox"/> g. CARBOY			<input type="checkbox"/> k. BOX			<input type="checkbox"/> o. TOTE BIN					
<input checked="" type="checkbox"/> d. STEEL DRUM			<input type="checkbox"/> h. SILO			<input type="checkbox"/> l. CYLINDER			<input type="checkbox"/> p. TANK WAGON					
STORAGE PRESSURE 224														
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT														
STORAGE TEMPERATURE 225														
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC														

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226		<input type="checkbox"/> Yes <input type="checkbox"/> No 227	
2 230		<input type="checkbox"/> Yes <input type="checkbox"/> No 232	
3 234		<input type="checkbox"/> Yes <input type="checkbox"/> No 236	
4 238		<input type="checkbox"/> Yes <input type="checkbox"/> No 240	
5 242		<input type="checkbox"/> Yes <input type="checkbox"/> No 244	

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY				DATE RECEIVED				REVIEWED BY			
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA					

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3											
My Company											
CHEMICAL LOCATION 201										CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202	
West interior area of property										<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
FACILITY ID #					MAP# (optional) 203			GRID# (optional) 204			
					1			3-C and 3-D			

II. CHEMICAL INFORMATION

CHEMICAL NAME 205										TRADE SECRET <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 206																															
Used oil										If Subject to EPCRA, refer to instructions																															
COMMON NAME 207										EHS* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 208																															
CAS# 209										*If EHS is "Yes", all amounts below must be in lbs.																															
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210																																									
HAZARDOUS MATERIAL TYPE (Check one item only) 211								RADIOACTIVE <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 212		CURIES N/A 213																															
<input type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input checked="" type="checkbox"/> c. WASTE																																									
PHYSICAL STATE (Check one item only) 214								LARGEST CONTAINER 55 215																																	
<input type="checkbox"/> a. SOLID <input checked="" type="checkbox"/> b. LIQUID <input type="checkbox"/> c. GAS																																									
FED HAZARD CATEGORIES (Check all that apply) 216																																									
<input type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input checked="" type="checkbox"/> e. CHRONIC HEALTH																																									
AVERAGE DAILY AMOUNT 217				MAXIMUM DAILY AMOUNT 218				ANNUAL WASTE AMOUNT 219		STATE WASTE CODE 220																															
25				110				1000		221																															
UNITS* (Check one item only) 221										DAYS ON SITE: 222																															
<input checked="" type="checkbox"/> a. GALLONS <input type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS <small>* If EHS, amount must be in pounds.</small>										365																															
STORAGE CONTAINER 223																																									
<input type="checkbox"/> a. ABOVE GROUND TANK <input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM <input type="checkbox"/> i. FIBER DRUM <input type="checkbox"/> m. GLASS BOTTLE <input type="checkbox"/> q. RAIL CAR <input type="checkbox"/> b. UNDERGROUND TANK <input type="checkbox"/> f. CAN <input type="checkbox"/> j. BAG <input type="checkbox"/> n. PLASTIC BOTTLE <input type="checkbox"/> r. OTHER <input type="checkbox"/> c. TANK INSIDE BUILDING <input type="checkbox"/> g. CARBOY <input type="checkbox"/> k. BOX <input type="checkbox"/> o. TOTE BIN <input checked="" type="checkbox"/> d. STEEL DRUM <input type="checkbox"/> h. SILO <input type="checkbox"/> l. CYLINDER <input type="checkbox"/> p. TANK WAGON																																									
STORAGE PRESSURE <input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT 224																																									
STORAGE TEMPERATURE <input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC 225																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">#</th> <th style="width: 15%;">%WT</th> <th style="width: 45%;">HAZARDOUS COMPONENT (For mixture or waste only)</th> <th style="width: 15%;">EHS</th> <th style="width: 15%;">CAS #</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>100 %</td> <td>Used Petroleum Oil</td> <td><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</td> <td>N/A</td> </tr> <tr> <td>2</td> <td></td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td></td> </tr> </tbody> </table>												#	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #	1	100 %	Used Petroleum Oil	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	2			<input type="checkbox"/> Yes <input type="checkbox"/> No		3			<input type="checkbox"/> Yes <input type="checkbox"/> No		4			<input type="checkbox"/> Yes <input type="checkbox"/> No		5			<input type="checkbox"/> Yes <input type="checkbox"/> No	
#	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #																																					
1	100 %	Used Petroleum Oil	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A																																					
2			<input type="checkbox"/> Yes <input type="checkbox"/> No																																						
3			<input type="checkbox"/> Yes <input type="checkbox"/> No																																						
4			<input type="checkbox"/> Yes <input type="checkbox"/> No																																						
5			<input type="checkbox"/> Yes <input type="checkbox"/> No																																						
<small>If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.</small>																																									

ADDITIONAL LOCALLY COLLECTED INFORMATION 246											

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY				DATE RECEIVED				REVIEWED BY			
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA					

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3											
My Company											
CHEMICAL LOCATION 201								CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202			
North exterior wall of property								<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
FACILITY ID #					MAP# (optional) 203			GRID# (optional) 204			
					1			3-D			

II. CHEMICAL INFORMATION

CHEMICAL NAME 205						TRADE SECRET <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 206								
						<small>If Subject to EPCRA, refer to instructions</small>								
COMMON NAME 207						EHS* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 208								
Waste Coolant														
CAS# 209						*If EHS is "Yes", all amounts below must be in lbs.								
107-21-1														
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210														
HAZARDOUS MATERIAL TYPE (Check one item only) 211					RADIOACTIVE <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 212			CURIES N/A 213						
<input type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input checked="" type="checkbox"/> c. WASTE														
PHYSICAL STATE (Check one item only) 214					LARGEST CONTAINER 55 215									
<input type="checkbox"/> a. SOLID <input checked="" type="checkbox"/> b. LIQUID <input type="checkbox"/> c. GAS														
FED HAZARD CATEGORIES (Check all that apply) 216														
<input type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input checked="" type="checkbox"/> e. CHRONIC HEALTH														
AVERAGE DAILY AMOUNT 217			MAXIMUM DAILY AMOUNT 218			ANNUAL WASTE AMOUNT 219			STATE WASTE CODE 220					
40			55			110			132					
UNITS* (Check one item only) 221								DAYS ON SITE: 222						
<input checked="" type="checkbox"/> a. GALLONS <input type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS								365						
<small>* If EHS, amount must be in pounds.</small>														
STORAGE CONTAINER 223														
<input type="checkbox"/> a. ABOVE GROUND TANK			<input checked="" type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM			<input type="checkbox"/> i. FIBER DRUM			<input type="checkbox"/> m. GLASS BOTTLE			<input type="checkbox"/> q. RAIL CAR		
<input type="checkbox"/> b. UNDERGROUND TANK			<input type="checkbox"/> f. CAN			<input type="checkbox"/> j. BAG			<input type="checkbox"/> n. PLASTIC BOTTLE			<input type="checkbox"/> r. OTHER		
<input type="checkbox"/> c. TANK INSIDE BUILDING			<input type="checkbox"/> g. CARBOY			<input type="checkbox"/> k. BOX			<input type="checkbox"/> o. TOTE BIN					
<input type="checkbox"/> d. STEEL DRUM			<input type="checkbox"/> h. SILO			<input type="checkbox"/> l. CYLINDER			<input type="checkbox"/> p. TANK WAGON					
STORAGE PRESSURE 224														
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT														
STORAGE TEMPERATURE 225														
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC														

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 50% 226	Ethylene Glycol 227	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 228	107-21-1 229
2 230	231	<input type="checkbox"/> Yes <input type="checkbox"/> No 232	233
3 234	235	<input type="checkbox"/> Yes <input type="checkbox"/> No 236	237
4 238	239	<input type="checkbox"/> Yes <input type="checkbox"/> No 240	241
5 242	243	<input type="checkbox"/> Yes <input type="checkbox"/> No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY				DATE RECEIVED				REVIEWED BY			
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA					

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)										3
My Company										
CHEMICAL LOCATION					201	CHEMICAL LOCATION CONFIDENTIAL (EPCRA)				202
Materials handling area						<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
FACILITY ID #						MAP# (optional)		GRID# (optional)		204
						1		5-E		

II. CHEMICAL INFORMATION

CHEMICAL NAME					205	TRADE SECRET			206		
Acetylene						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
If Subject to EPCRA, refer to instructions											
COMMON NAME					207	EHS*			208		
Welding gas						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
CAS#					209	*If EHS is "Yes", all amounts below must be in lbs.					
74-86-2											
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) H-4, F-4, R-2										210	
HAZARDOUS MATERIAL TYPE (Check one item only)					211	RADIOACTIVE		212	CURIES N/A		
<input checked="" type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input type="checkbox"/> c. WASTE						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
PHYSICAL STATE (Check one item only)					214	LARGEST CONTAINER					215
<input type="checkbox"/> a. SOLID <input type="checkbox"/> b. LIQUID <input checked="" type="checkbox"/> c. GAS						382					
FED HAZARD CATEGORIES (Check all that apply)										216	
<input checked="" type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input checked="" type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input type="checkbox"/> e. CHRONIC HEALTH											
AVERAGE DAILY AMOUNT			MAXIMUM DAILY AMOUNT		ANNUAL WASTE AMOUNT		STATE WASTE CODE			220	
382			382		N/A		N/A				
UNITS* (Check one item only)							221	DAYS ON SITE:			222
<input type="checkbox"/> a. GALLONS <input checked="" type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS								365			
STORAGE CONTAINER											223
<input type="checkbox"/> a. ABOVE GROUND TANK		<input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM		<input type="checkbox"/> i. FIBER DRUM		<input type="checkbox"/> m. GLASS BOTTLE		<input type="checkbox"/> q. RAIL CAR			
<input type="checkbox"/> b. UNDERGROUND TANK		<input type="checkbox"/> f. CAN		<input type="checkbox"/> j. BAG		<input type="checkbox"/> n. PLASTIC BOTTLE		<input type="checkbox"/> r. OTHER			
<input type="checkbox"/> c. TANK INSIDE BUILDING		<input type="checkbox"/> g. CARBOY		<input type="checkbox"/> k. BOX		<input type="checkbox"/> o. TOTE BIN					
<input type="checkbox"/> d. STEEL DRUM		<input type="checkbox"/> h. SILO		<input checked="" type="checkbox"/> l. CYLINDER		<input type="checkbox"/> p. TANK WAGON					
STORAGE PRESSURE					224						
<input type="checkbox"/> a. AMBIENT <input checked="" type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT											
STORAGE TEMPERATURE					225						
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC											

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1		<input type="checkbox"/> Yes <input type="checkbox"/>	
226	227	228	229
2		<input type="checkbox"/> Yes <input type="checkbox"/> No	
230	231	232	233
3		<input type="checkbox"/> Yes <input type="checkbox"/> No	
234	235	236	237
4		<input type="checkbox"/> Yes <input type="checkbox"/> No	
238	239	240	241
5		<input type="checkbox"/> Yes <input type="checkbox"/> No	
242	243	244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY			DATE RECEIVED			REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA		

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As)			3
My Company			
CHEMICAL LOCATION		201	CHEMICAL LOCATION CONFIDENTIAL (EPCRA) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO 202
West interior wall of property			
FACILITY ID #	MAP# (optional)	203	GRID# (optional) 204
	1		6-C

II. CHEMICAL INFORMATION

CHEMICAL NAME		205	TRADE SECRET <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 206
Perchloroethylene			<small>If Subject to EPCRA, refer to instructions</small>
COMMON NAME		207	EHS* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 208
PERC			
CAS#		209	*If EHS is "Yes", all amounts below must be in lbs. 210
127-18-4			
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) H-4, F-0, R-4			
HAZARDOUS MATERIAL TYPE (Check one item only)	<input checked="" type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input type="checkbox"/> c. WASTE	211	RADIOACTIVE <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 212 CURIES N/A 213
PHYSICAL STATE (Check one item only)	<input type="checkbox"/> a. SOLID <input checked="" type="checkbox"/> b. LIQUID <input type="checkbox"/> c. GAS	214	LARGEST CONTAINER 80 215
FED HAZARD CATEGORIES (Check all that apply)	<input type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input type="checkbox"/> c. PRESSURE RELEASE <input checked="" type="checkbox"/> d. ACUTE HEALTH <input checked="" type="checkbox"/> e. CHRONIC HEALTH 216		
AVERAGE DAILY AMOUNT	MAXIMUM DAILY AMOUNT	ANNUAL WASTE AMOUNT	STATE WASTE CODE
45	80	N/A	N/A
UNITS* (Check one item only)	<input checked="" type="checkbox"/> a. GALLONS <input type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS		221
	<small>* If EHS, amount must be in pounds.</small>		DAYS ON SITE: 365 222
STORAGE CONTAINER	<input type="checkbox"/> a. ABOVE GROUND TANK <input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM <input type="checkbox"/> i. FIBER DRUM <input type="checkbox"/> m. GLASS BOTTLE <input type="checkbox"/> q. RAIL CAR <input type="checkbox"/> b. UNDERGROUND TANK <input type="checkbox"/> f. CAN <input type="checkbox"/> j. BAG <input type="checkbox"/> n. PLASTIC BOTTLE <input type="checkbox"/> r. OTHER <input checked="" type="checkbox"/> c. TANK INSIDE BUILDING <input type="checkbox"/> g. CARBOY <input type="checkbox"/> k. BOX <input type="checkbox"/> o. TOTE BIN <input type="checkbox"/> d. STEEL DRUM <input type="checkbox"/> h. SILO <input type="checkbox"/> l. CYLINDER <input type="checkbox"/> p. TANK WAGON 223		
STORAGE PRESSURE	<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT 224		
STORAGE TEMPERATURE	<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC 225		

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226		<input type="checkbox"/> Yes <input type="checkbox"/> No 227	<input type="checkbox"/> Yes <input type="checkbox"/> No 228
2 230		<input type="checkbox"/> Yes <input type="checkbox"/> No 231	<input type="checkbox"/> Yes <input type="checkbox"/> No 232
3 234		<input type="checkbox"/> Yes <input type="checkbox"/> No 235	<input type="checkbox"/> Yes <input type="checkbox"/> No 236
4 238		<input type="checkbox"/> Yes <input type="checkbox"/> No 239	<input type="checkbox"/> Yes <input type="checkbox"/> No 240
5 242		<input type="checkbox"/> Yes <input type="checkbox"/> No 243	<input type="checkbox"/> Yes <input type="checkbox"/> No 244

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information. 246

ADDITIONAL LOCALLY COLLECTED INFORMATION

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY			DATE RECEIVED			REVIEWED BY		
DIV	BN	STA	OTHER	DISTRICT	CUPA	PA		

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3											
My Company											
CHEMICAL LOCATION 201						CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202					
Materials handling area						<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
FACILITY ID #				MAP# (optional) 203				GRID# (optional) 204			
				1				4-E			

II. CHEMICAL INFORMATION

CHEMICAL NAME 205						TRADE SECRET <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 206									
Propane						If Subject to EPCRA, refer to instructions									
COMMON NAME 207						EHS* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 208									
Liquid Petroleum Gas						*If EHS is "Yes", all amounts below must be in lbs.									
CAS# 209															
74-98-6															
FIRE CODE HAZARD CLASSES (Complete if required by CUPA) H-1, F-4, R-0 210															
HAZARDOUS MATERIAL TYPE (Check one item only) 211						RADIOACTIVE <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 212			CURIES N/A 213						
<input checked="" type="checkbox"/> a. PURE <input type="checkbox"/> b. MIXTURE <input type="checkbox"/> c. WASTE															
PHYSICAL STATE (Check one item only) 214						LARGEST CONTAINER 271 215									
<input type="checkbox"/> a. SOLID <input type="checkbox"/> b. LIQUID <input checked="" type="checkbox"/> c. GAS															
FED HAZARD CATEGORIES (Check all that apply) 216															
<input checked="" type="checkbox"/> a. FIRE <input type="checkbox"/> b. REACTIVE <input checked="" type="checkbox"/> c. PRESSURE RELEASE <input type="checkbox"/> d. ACUTE HEALTH <input type="checkbox"/> e. CHRONIC HEALTH															
AVERAGE DAILY AMOUNT 217				MAXIMUM DAILY AMOUNT 218				ANNUAL WASTE AMOUNT 219				STATE WASTE CODE 220			
542				542				N/A				N/A			
UNITS* (Check one item only) 221										DAYS ON SITE: 222					
<input type="checkbox"/> a. GALLONS <input checked="" type="checkbox"/> b. CUBIC FEET <input type="checkbox"/> c. POUNDS <input type="checkbox"/> d. TONS										365					
STORAGE CONTAINER 223															
<input type="checkbox"/> a. ABOVE GROUND TANK			<input type="checkbox"/> e. PLASTIC/NONMETALLIC DRUM			<input type="checkbox"/> i. FIBER DRUM			<input type="checkbox"/> m. GLASS BOTTLE			<input type="checkbox"/> q. RAIL CAR			
<input type="checkbox"/> b. UNDERGROUND TANK			<input type="checkbox"/> f. CAN			<input type="checkbox"/> j. BAG			<input type="checkbox"/> n. PLASTIC BOTTLE			<input type="checkbox"/> r. OTHER			
<input type="checkbox"/> c. TANK INSIDE BUILDING			<input type="checkbox"/> g. CARBOY			<input type="checkbox"/> k. BOX			<input type="checkbox"/> o. TOTE BIN						
<input type="checkbox"/> d. STEEL DRUM			<input type="checkbox"/> h. SILO			<input checked="" type="checkbox"/> l. CYLINDER			<input type="checkbox"/> p. TANK WAGON						
STORAGE PRESSURE 224															
<input type="checkbox"/> a. AMBIENT <input checked="" type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT															
STORAGE TEMPERATURE 225															
<input checked="" type="checkbox"/> a. AMBIENT <input type="checkbox"/> b. ABOVE AMBIENT <input type="checkbox"/> c. BELOW AMBIENT <input type="checkbox"/> d. CRYOGENIC															
%WT		HAZARDOUS COMPONENT (For mixture or waste only)					EHS			CAS #					
1 226							<input type="checkbox"/> Yes <input type="checkbox"/> No 228								
2 230							<input type="checkbox"/> Yes <input type="checkbox"/> No 232								
3 234							<input type="checkbox"/> Yes <input type="checkbox"/> No 236								
4 238							<input type="checkbox"/> Yes <input type="checkbox"/> No 240								
5 242							<input type="checkbox"/> Yes <input type="checkbox"/> No 244								

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
(Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

OFFICIAL USE ONLY				DATE RECEIVED				REVIEWED BY					
DIV		BN		STA		OTHER		DISTRICT		CUPA		PA	

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3

My Company

CHEMICAL LOCATION 201 CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202
 YES NO

Materials handling area

FACILITY ID # 1 MAP# (optional) 203 GRID# (optional) 204
1 **4-E**

II. CHEMICAL INFORMATION

CHEMICAL NAME 205 TRADE SECRET 206
 Yes No
 If Subject to EPCRA, refer to instructions

Carbon dioxide

COMMON NAME 207 EHS* 208
 Yes No

CO2

CAS# 209 *If EHS is "Yes", all amounts below must be in lbs.

124-38-9

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) 211 RADIOACTIVE Yes No 212 CURIES **N/A** 213
 a. PURE b. MIXTURE c. WASTE

PHYSICAL STATE (Check one item only) 214 LARGEST CONTAINER 215
 a. SOLID b. LIQUID c. GAS **175**

FED HAZARD CATEGORIES (Check all that apply) 216
 a. FIRE b. REACTIVE c. PRESSURE RELEASE d. ACUTE HEALTH e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217 MAXIMUM DAILY AMOUNT 218 ANNUAL WASTE AMOUNT 219 STATE WASTE CODE 220
350 **350** **N/A** **N/A**

UNITS* (Check one item only) 221 DAYS ON SITE: 222
 a. GALLONS b. CUBIC FEET c. POUNDS d. TONS **365**
 * If EHS, amount must be in pounds.

STORAGE CONTAINER 223
 a. ABOVE GROUND TANK e. PLASTIC/NONMETALLIC DRUM i. FIBER DRUM m. GLASS BOTTLE q. RAIL CAR
 b. UNDERGROUND TANK f. CAN j. BAG n. PLASTIC BOTTLE r. OTHER
 c. TANK INSIDE BUILDING g. CARBOY k. BOX o. TOTE BIN
 d. STEEL DRUM h. SILO l. CYLINDER p. TANK WAGON

STORAGE PRESSURE 224
 a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT

STORAGE TEMPERATURE 225
 a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT d. CRYOGENIC

#	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	227	<input type="checkbox"/> Yes <input type="checkbox"/> No 228	229
2	230	231	<input type="checkbox"/> Yes <input type="checkbox"/> No 232	233
3	234	235	<input type="checkbox"/> Yes <input type="checkbox"/> No 236	237
4	238	239	<input type="checkbox"/> Yes <input type="checkbox"/> No 240	241
5	242	243	<input type="checkbox"/> Yes <input type="checkbox"/> No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
 (Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

SAMPLE

UNIFIED PROGRAM (UP) FORM HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (Form 2731)

(one page per material per building or area)

ADD DELETE REVISE REPORTING YEAR **2003** 200 Page of

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3

My Company

CHEMICAL LOCATION 201 CHEMICAL LOCATION CONFIDENTIAL (EPCRA) 202
 YES NO

Materials handling area

FACILITY ID # 1 MAP# (optional) 203 GRID# (optional) 204
1 **5-E**

II. CHEMICAL INFORMATION

CHEMICAL NAME 205 TRADE SECRET 206
 Yes No
 If Subject to EPCRA, refer to instructions

Helium

COMMON NAME 207 EHS* 208
 Yes No

Helium gas

CAS# 209 *If EHS is "Yes", all amounts below must be in lbs.

7440-59-7

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) 211 RADIOACTIVE 212 CURIES 213
 a. PURE b. MIXTURE c. WASTE Yes No **N/A**

PHYSICAL STATE (Check one item only) 214 LARGEST CONTAINER 215
 a. SOLID b. LIQUID c. GAS **275**

FED HAZARD CATEGORIES (Check all that apply) 216
 a. FIRE b. REACTIVE c. PRESSURE RELEASE d. ACUTE HEALTH e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217 MAXIMUM DAILY AMOUNT 218 ANNUAL WASTE AMOUNT 219 STATE WASTE CODE 220
275 **275** **N/A** **N/A**

UNITS* (Check one item only) 221 DAYS ON SITE: 222
 a. GALLONS b. CUBIC FEET c. POUNDS d. TONS **365**
 * If EHS, amount must be in pounds.

STORAGE CONTAINER 223
 a. ABOVE GROUND TANK e. PLASTIC/NONMETALLIC DRUM i. FIBER DRUM m. GLASS BOTTLE q. RAIL CAR
 b. UNDERGROUND TANK f. CAN j. BAG n. PLASTIC BOTTLE r. OTHER
 c. TANK INSIDE BUILDING g. CARBOY k. BOX o. TOTE BIN
 d. STEEL DRUM h. SILO l. CYLINDER p. TANK WAGON

STORAGE PRESSURE 224
 a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT

STORAGE TEMPERATURE 225
 a. AMBIENT b. ABOVE AMBIENT c. BELOW AMBIENT d. CRYOGENIC

#	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	227	<input type="checkbox"/> Yes <input type="checkbox"/> No 228	229
2	230	231	<input type="checkbox"/> Yes <input type="checkbox"/> No 232	233
3	234	235	<input type="checkbox"/> Yes <input type="checkbox"/> No 236	237
4	238	239	<input type="checkbox"/> Yes <input type="checkbox"/> No 240	241
5	242	243	<input type="checkbox"/> Yes <input type="checkbox"/> No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here
 (Facilities reporting Chemicals subject to EPCRA reporting thresholds must sign each Chemical Description page for each EPCRA reported chemical.)

SAMPLE

For your convenience:

Copies of the Full and Short Version of the THE CUPAs OF LOS ANGELES COUNTY UNIFIED PROGRAM (UP) FORM and individual pages of the form are available for download at one of the following CUPA or PA web sites:

[Los Angeles County Fire Department](http://fire.lacounty.gov/HealthHazMat/HHMDForms.asp)
(<http://fire.lacounty.gov/HealthHazMat/HHMDForms.asp>)

**6. Labeling of Hazardous Materials - Los Angeles
County Fire Department – Health HazMat**



Los Angeles County
Certified Unified Program Agency
Health Hazardous Materials Division



HAZARDOUS MATERIALS LABELING

FACT SHEET 02-01-HW

OCTOBER 2002

Hazardous waste regulations require that if hazardous materials are not properly labeled they must be managed as hazardous waste. The Uniform Fire Code requires that individual containers, cartons or packages shall be conspicuously marked or labeled in accordance with nationally recognized standards. These standards can be found in OSHA regulations.

OSHA REQUIREMENTS

Each container of hazardous chemicals in the workplace must be labeled, tagged or marked with the following information:

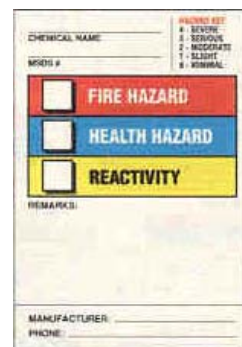
- Identity of the hazardous chemical(s)
- Appropriate hazard warnings

Individual stationary process containers can be identified by signs, etc., rather than affixing the label to the container.

Newer containers are shipped with the appropriate labeling. However, older containers may not have the appropriate labeling, labels may have been damaged, or a hazardous material may have been transferred to a container which previously held another type of hazardous material and is now mislabeled.

HOW TO LABEL CORRECTLY

Labels or tags can be purchased from a safety supply company, or the required information can be marked directly on the container. Chemical name(s) and hazard warnings can be found on the Material Safety Data Sheet (MSDS) provided by the supplier when the chemical was purchased. If you can not locate the MSDS, obtain one from the supplier. Place the label, tag or marking in a conspicuous place on the container.



HAZARDOUS MATERIALS LABELING

FACT SHEET 02-01-HW

PAGE 2

OCTOBER 2002

NOTE: *This fact sheet is a summary of the laws and regulations pertaining to this subject. It is intended for informational purposes only and may not encompass all the laws and regulations to this topic. More details may be found at Cal/EPA Department of Toxic Substance Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045, or your local district office.*

References

- 22 California Code of Regulations 66261.2(f)
- 29 Code of Federal Regulations 1910.1200(f)
- Title 32, Los Angeles County Code 8001.9.8

H:\SHARED\FACTSHEETS\HAZARDOUS MATERIALS LABELING.doc

7. Separation of Incompatible Materials - Los Angeles County Fire Department – Health HazMat



Los Angeles County
Certified Unified Program Agency
Health Hazardous Materials Division



SEPARATION OF INCOMPATIBLE CHEMICALS

FACT SHEET 02-03-HW

OCTOBER 2002

Hazardous waste regulation requires that hazardous waste must be separated from incompatible materials. Additionally, the fire code requires that incompatible materials must be stored separately.

WHAT DOES "INCOMPATIBLE" MEAN?

Chemical reactions occur when certain chemicals are mixed together. In uncontrolled circumstances (i.e., spills), chemicals that are not compatible with each other may react with one another and produce any of the following hazards:

- Heat or pressure
- Fire or explosion
- Violent reaction
- Toxic dusts, mists, fumes or gases, or
- Flammable fumes or gases

Chemicals which, when mixed with each other, can react to produce these hazards are termed "incompatible". They must be stored separately in order to prevent uncontrolled chemical reactivity hazards. For hazardous materials storage, this requirement only applies if containers have a capacity of greater than five pounds or one-half gallon.

HOW TO SEPARATE INCOMPATIBLES

- Distance – separate by a distance of not less than 20 feet
- Partition – isolate using partitions, berms or spill pallets
- Cabinets

HOW TO DETERMINE CHEMICAL COMPATIBILITY

Chemicals can usually be grouped into generic hazard groups, with the more common groups being flammable/combustible, acid, alkaline, oxidizer and reactive. These groups are incompatible with each other and must be stored separately.

The best way to determine incompatibility is to consult the Material Safety Data Sheet (MSDS). Section I of the MSDS will identify the chemical family and Section IV (Reactivity Data) will identify incompatible materials. Hazardous wastes may be harder to categorize, as they may have undergone chemical changes in the process of becoming a waste. If the waste has not retained the same chemical properties as the material, consult the waste profile (for disposal) or a professional to help you determine in what hazard group the waste belongs.

NOTE: This fact sheet is a summary of the laws and regulations pertaining to this subject. It is intended for informational purposes only and may not encompass all the laws and regulations to this topic. More details may be found at Cal/EPA Department of Toxic Substance Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045, or your local district office.

References

- 22 California Code of Regulations 66262.34(a)(1)
- Title 32, Los Angeles County Code 8001.9.8

**8. Universal Waste Management – California
Department of Toxic Substances**



LOS ANGELES COUNTY FIRE DEPARTMENT
HEALTH HAZARDOUS MATERIALS DIVISION
UNIFIED PROGRAM AGENCY



UNIVERSAL WASTE MANAGEMENT GUIDANCE DOCUMENT

GD - 8- HW - 2007

BACKGROUND

This guidance document describes the types of universal wastes that are common hazardous waste generated by households and businesses. Once a household or business determines that they are universal waste generators, they need to evaluate whether they are eligible for the conditional universal waste exemptions as addressed at the end of this guidance document. However, as of February 2006, absolutely no universal waste can be disposed as municipal solid waste (i.e., cannot be thrown in the trash). The proper management practices required for non-exempt universal waste generators, handlers, and processors can be obtained from our other fact sheets and from our "Compliance Guidelines for Hazardous Wastes and Hazardous Materials" available on-line from our website: http://lacofd.org/guidance_documents.htm.

WHAT IS UNIVERSAL WASTE?

Universal waste is hazardous waste because it is either toxic, ignitable, corrosive, and/or reactive. Some universal wastes are even listed hazardous wastes. However, universal waste is more common and poses presumably a lower risk to people and the environment than other hazardous waste. Universal waste is generated by a wide variety of people rather than by the industrial businesses that primarily generate other hazardous waste. New laws adopted in 2000 created California's *Universal Waste Rule* to simplify how we manage these common hazardous wastes. State laws and regulations identify universal wastes and provide less stringent rules for handling, recycling and disposing of them. Universal waste regulations are in the California Code of Regulations, Title 22, Division 4.5, Chapter 23. Without the new *Universal Waste Rule*, all universal waste would have to be managed under the same stringent standards as other hazardous waste.

TYPES OF UNIVERSAL WASTE

The types of universal wastes specified in California laws and regulations include, but are not limited to, the following:

Batteries: Universal waste batteries include rechargeable nickel-cadmium batteries, silver "button" batteries, mercury batteries, small sealed lead-acid batteries (burglar alarm and emergency light batteries), most alkaline batteries, and carbon-zinc batteries. Automobile batteries and other similar lead-acid batteries do not qualify as universal waste.

Lamps: Universal waste lamps include fluorescent tubes, high-intensity discharge lamps, sodium vapor lamps, and any other lamps that exhibit a characteristic of hazardous waste. Effective February 9, 2004, all lamps that contain any quantity of intentionally added mercury (no matter how small) will be considered a state listed universal waste (i.e., M003 listed waste) and must be managed as such.

Non-Empty Aerosol Cans: In 2002, California Health and Safety Code (HSC Sec. 25201.16) added non-empty aerosol cans to the list of universal waste.- *Empty* means that all the contents are used that could be used when the delivery mechanism functions properly. *Non-empty* means that there are still contents in the can that cannot be dispensed through normal use of the can (e.g., usually as a result of a damaged delivery mechanism). Universal waste non-empty aerosol cans contain materials and propellants that are ignitable, toxic, corrosive, and/or reactive.

UNIVERSAL WASTE MANAGEMENT GUIDANCE DOCUMENT

GD - 8- HW - 2007

PAGE 2

Consumer Electronic Devices: Consumer electronic devices (CEDs) or any of their components (that exhibit a hazardous characteristic) must be managed as universal waste. CEDs include, but are not limited to: cell phones, telephones, fax machines, game consoles, computer processing units, radios, VCRs, CD players, calculators, stereo equipment, and many other electronic products. Cathode ray tubes are not considered as CEDs in the universal waste regulations and are managed under separate universal waste regulations.

Cathode Ray Tubes: Cathode ray tubes (CRTs) containing lead must be managed as universal waste. CRTs are vacuum or picture tubes contained in computer monitors, televisions, some camcorders and many other electronic devices. A typical CRT contains between two and five pounds of lead; many television CRTs contain as much as eight pounds of lead. CRTs and CRT glass have specific regulations in the California Code of Regulations, Title 22, Division 4.5, Chapter 23, Article 7.

IDENTIFYING UNIVERSAL WASTE GENERATORS

Mercury Thermostats: Mercury containing thermostats contain small glass capsules of mercury to make electrical contacts to *turn on* associated heating ventilation and cooling (HVAC) systems. Most modern electrical thermostats do not contain mercury and need not be managed as universal waste.

Mercury Thermometers: All mercury-containing thermometers, including fever thermometers, must be managed as universal waste.

Mercury Switches: Universal waste mercury switches are comprised of two types of switches, which include motor vehicle light switches and non-automotive mercury switches.

Motor vehicle light switches (automatic hood and trunk light switches), once removed from vehicles, are designated as universal waste by Health and Safety Code section 25214.6. As of January 2005, vehicles that contain the mercury switches will also be considered listed universal waste (i.e., M001 listed waste) and must be managed as such until the mercury light switches are removed.

Non-automotive mercury switches (thermostats and tip switches in portable heaters, washing machines out-of-balance switches, silent wall switches, and other mercury containing switches), once removed from products, is universal waste. As of February 9, 2006, the non-automotive mercury switches and the products that contain them will also be considered listed universal waste (i.e., M002 listed waste) and must be managed as such until the mercury switches are removed.

Mercury Gauges: Mercury-containing pressure and vacuum gauges are now managed as universal wastes. These gauges include, but are not limited to, U-tube manometers, barometers, and blood pressure meters.

Dental Amalgam: Dental amalgam tooth filling materials including waste amalgam – bits and pieces from chair side traps and spent wastewater filters – must be managed as universal waste because amalgam usually contains mercury and other heavy metals.

Mercury Novelties: Universal waste mercury novelties contain mercury or mercury batteries such as some singing greeting cards, flashing athletic shoes, jewelry, and other items.

Other Mercury Containing Materials: Other mercury-containing universal wastes include: *Medical Dilators and Weighted Tubing*; *Rubber Flooring* (e.g., older gymnasium floors and indoor tracks); *Counterweights and Dampers* (e.g., pouches of high density mercury to dampen shaking on hunting bows and snow skis or to absorb recoil on shotguns); and, *Mercury Gas Flow Regulators* (e.g., older gas flow regulators that are managed exclusively by natural gas utilities).

UNIVERSAL WASTE MANAGEMENT GUIDANCE DOCUMENT

GD - 8- HW - 2007

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TEMPORARY AND CONDITIONAL EXEMPTIONS

Household Exemption: Universal wastes are common types of hazardous waste generated by almost everybody, especially *households*. A *household* is a private residence; it is not a hotel, motel, bunkhouse, ranger station, fire station, crew quarters, campground, picnic ground, or a day use recreation area. Households are exempt from most universal waste management requirements (e.g., labeling and training). However, as of February 2006, all households are prohibited from disposing *ANY* universal waste in the trash.

Business Exemption: Only businesses that are conditionally exempt small quantity universal waste generators (CESQUWGs) are eligible for the conditional universal waste exemptions. A CESQUWG is a generator of universal waste who:

- Generates no more than 100 kilograms (220 pounds) of RCRA hazardous wastes and no more than one kilogram (2.2 pounds) of acutely hazardous waste in any calendar month (when making this quantity determination, the generator must include all universal waste except CRT materials); and,
- Generates a total of five or less CRT devices in a calendar year; and,
- Remains in compliance with the federal EPA's special requirements for hazardous waste generated by conditionally exempt small quantity generators (40 CFR 261.5).

A business that qualifies as a CESQUWG is exempt from most universal waste management requirements (e.g., labeling and training). However, CESQUWGs are prohibited from disposing *ANY* universal waste in the trash.

Disclaimer

This guidance document does not replace or supersede relevant statutes and regulations. It is intended for informational purposes only and may not encompass all of the statutes and regulations to this topic. More details may be found at Cal EPA Department of Toxic Substances Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045.

9. Management of Cathode Ray Tubes - Los Angeles County Fire Department – Health HazMat



**Los Angeles County
Certified Unified Program Agency
Health Hazardous Materials Division**



MANAGEMENT OF CATHODIC RAY TUBES (CRTs)

FACT SHEET 02-09-HW

OCTOBER 2002

This fact sheet summarizes the regulatory requirements for the management of Cathodic Ray Tubes (CRTs). The Department of Toxic Substances Control (DTSC) determined in 2001 that CRTs and products containing CRTs are hazardous wastes when discarded. However, to promote the proper management of CRTs, the DTSC adopted emergency regulations allowing CRTs to be managed as universal waste.

SUMMARY

CRTs are vacuum or picture tubes that are used to convert an electronic signal into a visual image. CRTs are contained in computer monitors, televisions, some camcorders and many other electronic devices. A typical CRT contains between two and five pounds of lead. Lead is a toxic substance, which may cause lead poisoning and can be harmful, especially to children. Following DTSC's determination that CRTs are hazardous waste when discarded, the California Integrated Waste Management Board notified local enforcement agencies that CRTs could not be disposed to the trash or the municipal landfills. In response to the resulting concerns on CRT management posed by industry, the DTSC adopted emergency regulations allowing CRTs to be managed as universal waste.

CRTs ARE UNIVERSAL WASTE

CRTs can now be managed as universal wastes. A universal waste is a hazardous waste that is regulated under a section of the State's hazardous waste regulations that deals with high volume, low-risks wastes such as batteries, fluorescent lamps and CRTs. Universal wastes are not subject to traditional hazardous waste requirements; however, they are subject to management requirements that are commensurate with the risk associated with their handling. Managing CRTs as universal waste significantly eases the associated management requirements while preventing the lead from these products from impacting the environment.

MANAGEMENT PRACTICES

The new CRT regulations affect anyone who generates, handles, collects, transports or recycles CRTs, CRT-containing devices or CRT glass in California. In order to manage CRTs properly as universal waste, all applicable requirements must be followed. Standards for CRT material handlers are set forth in Title 22, Chapter 23, Article 7 of the California Code of Regulations. Unless these requirements are met, CRTs must be managed in accordance with all applicable State hazardous waste requirements.

Storage and Spill Cleanup Requirements:

Computer and television monitors must be handled and stored in a manner that prevents breakage. A CRT material handler shall contain any CRT materials in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the container [22 CCR 66273.83]. A handler shall immediately cleanup and place in a container any CRT materials that are broken or shows evidence of breakage, leakage or damage that could cause the release of lead or other hazardous constituents to the environment [22 CCR 66273.87]. Broken CRTs may be managed as universal waste as long as they are shipped to an appropriate recycler.

MANAGEMENT OF CATHODIC RAY TUBES (CRTs)

DRAFT FACT SHEET 02-09-HW

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OCTOBER 2002

Labeling Requirements:

Each CRT, CRT device, container or pallet containing CRT devices or glass shall be labeled or marked clearly as "CRTs", "CRT Devices", "CRT Glass" or "Contains Leaded Glass" [22 CCR 66273.84].

Accumulation Time Requirements:

CRT wastes can be accumulated and stored on site for up to one year from the date generated or received from another handler. A CRT materials handler who accumulates CRT material must be able to demonstrate the length of time that the universal waste has been accumulated from the date it became a waste or was received. This may be demonstrated by keeping an on-site log or by labeling or marking all pallets, containers or individual CRTs to indicate when the material became a waste or was received on site [22 CCR 66273.85].

Shipping Requirements:

When shipping CRT materials, the handler shall keep a record of each shipment of CRT material sent from the handler to other facilities [22 CCR 66273.88]. The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of CRT material sent shall include the following information:

- The name and address of the CRT material handler, destination facility or foreign destination to whom the CRT material was sent;
- The quantity (count or weight) of each type of CRT material sent; and
- The date the shipment of CRT material left the facility.

When receiving CRT materials, the handler shall keep a record of each shipment of CRT materials received at the facility [22 CCR 66273.89]. The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of CRT material received shall include the following information:

- The name and address of the originating handler or foreign shipper;
- The quantity (count or weight) of each type of CRT material received; and
- The date of receipt of the shipment

Employee Training Requirements:

A CRT material handler shall inform all employees who handle or have responsibility for managing CRT material of the proper handling and emergency procedures appropriate for the waste handled at the facility [22 CCR 66273.86]. A log of employee training regarding CRT management should be kept on site.

Record Keeping and Notification Requirements:

The CRT material handler shall retain the records related to CRT management for at least three years. Such records include: inventory of waste generated, shipping and receiving logs/papers, employee training logs and so on. In addition to record keeping, the CRT material handler must submit an annual notification to the DTSC and the County of Los Angeles CUPA by November 1st of each year [22 CCR 66273.82] if the handler in a calendar year:

- Accepts more than five CRTs;
- Accepts more than five CRT devices;
- Accepts more than 100 kilograms of CRT glass; or
- Generates 5,000 kilograms or more of CRT material

NOTE: This fact sheet is a summary of the laws and regulations pertaining to this subject. It is intended for informational purposes only and may not encompass all the laws and regulations to this topic. More details may be found at Cal/EPA Department of Toxic Substance Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045, or your local district office.

References

- 22 California Code of Regulations 66273.80-90.

**10. Management of Empty Containers - California
Department of Toxic Substances**



**LOS ANGELES COUNTY FIRE DEPARTMENT
HEALTH HAZARDOUS MATERIALS DIVISION
UNIFIED PROGRAM AGENCY**



**EMPTY CONTAINER MANAGEMENT
GUIDANCE DOCUMENT**

GD - 3- HW - 2007

BACKGROUND

If a container that previously held hazardous waste meets the regulatory definition of “empty” and established management practices are met, then the “empty” container is exempt from further hazardous waste regulation.

DEFINITION OF “EMPTY CONTAINER”

- All materials must be removed, to the best extent possible, from the container:
- For containers that held a material that can be readily poured, all material must be removed by any practicable means (including pumping, aspirating and draining) before the container can be considered empty.
- For containers that previously held materials that are non-pourable, no hazardous material shall remain in the container that can feasibly be removed by physical methods including scraping and chipping. This applies to materials that pour slowly or don't pour at all from the container, including, but not limited to, viscous materials, solids that have “caked up” inside the container, and non-pourable sludges.
- Containers that held acute or extremely hazardous waste are considered empty if the container has been triple rinsed using a solvent capable of removing the material or cleaned by another method that is proven to achieve equivalent removal to triple rinsing.

MANAGEMENT PRACTICES

In order to retain the exemption from regulation, “empty” containers shall be managed pursuant to the following management practices:

Containers larger than five gallons in capacity:

Containers larger than five gallons in capacity shall be marked with the date they have been emptied and shall be managed within one year of being emptied by one of the following methods:

- By reclaiming the container's scrap value onsite or by sending the container to a person who reclaims the container's scrap value; or
- By reconditioning or remanufacturing the container onsite, or by shipping the container to a person who reconditions or manufactures the container.
- If the container has been shipped offsite, the name, street address, mailing address, and telephone number of the facility where the empty container has been shipped shall be maintained for three years.

Containers of five gallons or less in capacity:

- “Empty containers” of five gallons or less in capacity can be managed by one of the following methods:
 - ✓ By disposing of the container at an appropriate solid waste facility;
 - ✓ By reclaiming the container's scrap value onsite or by sending the container to a person who reclaims the container's scrap value; or
 - ✓ By reconditioning or remanufacturing the container onsite, or by shipping the container to a person who reconditions or remanufactures the container.

EMPTY CONTAINER MANAGEMENT GUIDANCE DOCUMENT

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SPECIAL PROVISIONS FOR SPECIFIC CONTAINERS

Compressed gas cylinders

Compressed gas cylinders are exempt from regulation when the pressure in the cylinder approaches atmospheric pressure.

Aerosol containers

- Aerosol containers are exempt from regulation when the container is emptied to the maximum extent practical under normal use provided that:
 - ✓ The empty container is not regulated by federal law under the Resource, Conservation and Recovery Act of 1976 (RCRA); and
 - ✓ The aerosol container did not previously hold an acute or extremely hazardous waste.
- Partially filled aerosol containers (i.e., aerosol containers with hazardous material remaining in the container due to a clogged nozzle) are not exempt from regulation and shall be managed as hazardous waste.

Containers made of absorptive materials

Containers made of absorptive materials (i.e., wood, cardboard and paper) are not exempt from regulation if the container was in direct contact with and has absorbed the hazardous material.

Disclaimer

This guidance document does not replace or supersede relevant statutes and regulations. It is intended for informational purposes only and may not encompass all of the statutes and regulations to this topic. More details may be found at Cal EPA Department of Toxic Substances Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045.

**11. Obtaining and Cal EPA Identification Number
(hazardous waste) - California Department of
Toxic Substances**



Department of
Toxic Substances
Control

*Preventing
environmental
damage from
hazardous waste,
and restoring
contaminated
sites for all
Californians.*



State of California



California
Environmental
Protection Agency

Fact Sheet, November 2007

EPA Identification Numbers for Generators

Regulatory Assistance Officer's Notes:

The Department of Toxic Substances Control (DTSC) Regulatory Assistance Office prepared this fact sheet to provide general information about EPA Identification Numbers. Throughout the online version of this fact sheet, numbers in blue ([66262.12](#)) represent citations from the California Code of Regulations or the California Health and Safety Code. Clicking on the blue numbers will take you to sites containing the regulations. If you generate hazardous waste, you should consult with your Certified Unified Program Agency (CUPA). Finally, DTSC strongly encourages all businesses that generate hazardous waste to consider waste minimization, source reduction, and pollution prevention.

What is an EPA ID Number?

This number, issued either by the U. S. Environmental Protection Agency (U.S. EPA ID Number), or by DTSC (California ID Number), identifies each handler of hazardous waste on hazardous waste manifests and other paperwork. The ID Number enables regulators to track the waste from its origin to final disposal (“cradle to grave.”) With the exceptions discussed later in this guidance, most hazardous waste generators must have an ID Number before a registered hazardous waste transporter will accept the waste for shipment. All hazardous waste transporters and permitted treatment, storage and disposal facilities must have ID numbers.

Are State and Federal laws the same?

The federal hazardous waste law (the Resource Conservation and Recovery Act, or “RCRA”) allows states to enact their own hazardous waste laws, which must be at least as stringent as the federal laws. The requirements under California law are more stringent than the federal criteria. Wastes that pass the federal hazardous waste criteria but fail the California criteria are called “non-RCRA” or “California-only” hazardous wastes. Wastes containing corrosive solids, asbestos, nickel or zinc are examples of common California-only hazardous wastes. Other states may not consider California-only wastes hazardous. Federal law also exempts generators of small quantities of waste from many federal waste management requirements.



How many ID Numbers do I need?

ID Numbers are site-specific and there is normally only one number at a business address. If you have a business that generates waste at multiple addresses that are not physically connected (contiguous), each address needs a separate ID Number. In the case where generators are independent businesses that operate in suites within the same building, each business must have their own ID Number. If you are not clear as to whether you operate on one site or multiple sites, contact your local environmental agency or the DTSC information resources listed at the end of this fact sheet.

Do I need a U.S. EPA ID Number, or a California ID Number?

If you generate more than 1 kilogram of RCRA acutely hazardous waste per month or more than 100 kilograms of other RCRA waste per month, you must get a U.S. EPA ID Number. If you generate 100 kilograms or less of RCRA waste or one kilogram or less per month of acutely hazardous waste, and meet certain other requirements, you are exempted by U.S. EPA from many of its regulations, including the requirement to have an EPA ID Number. These businesses are called “conditionally exempt small-quantity generators”, or CESQGs. The regulatory citation is 40 CFR section 261.5

However, California regulations do not have an equivalent small quantity generator exemption. Almost all business generators of hazardous waste in California that are not required to have a U.S. EPA ID Number must, in practice, have a California ID Number. See California Code of Regulations title 22, section 66262.12. However:

1. Generators handling only hazardous waste produced incidental to owning and maintaining their own place of residence do not need an ID Number, either federal or state.

2. Businesses whose ONLY hazardous waste generation is 100 kilograms or less per month of waste that is hazardous solely because of its silver content (“silver-only waste”) do not need an ID Number. This is true even if they treat the waste in silver-recovery units and then send the silver for reclamation. See Health and Safety Code section 25143.13. Also see the DTSC Fact Sheet, “Onsite Tiered Permitting: Changes in Regulation of Silver Wastes.”

3. Businesses that generate and manage less than 11,000 lbs (about 5 tons) of universal waste on-site at any one time may need to get a Federal EPA number. For information about obtaining a Federal EPA number, call (415) 495-8895. For information about Universal Waste, see DTSC’s “Managing Universal Waste in California”.

In summary, except for the above-mentioned exemptions, if you generate only non-RCRA hazardous wastes, or you generate less than 100 kilograms of RCRA hazardous waste per month (or less than 1 kilogram of RCRA acutely hazardous waste), you must get a California ID Number. If you generate more than 100 kilograms of RCRA waste per month or more than 1 kilogram of RCRA acutely hazardous waste per month, then you must get a U.S. EPA ID Number.

I used to be exempt from ID Number requirements. What happened?

The passage of Senate Bill 271 (effective January 1, 2002) removed the exemption that once allowed small generators of used oil and solvents to offer waste for transport without an EPA ID Number (former milkrun or modified manifest procedures.)

The Consolidated Manifesting procedure that replaced the milkrun manifesting procedure requires that generators using consolidated transporters provide them with an ID Number.

How do I get an EPA ID Number?

Handlers of RCRA waste who need an U.S. EPA ID Number must send a “Notification of Regulated Waste Activity”, form 8700-12, to the U.S. EPA contractor at the address given in its instructions. You can request this form by calling **(415) 495-8895**, or you can download the form from the [U.S. EPA](#) web site.

Handlers who do not need a U.S. EPA ID but do need a California ID Number can obtain it by completing and submitting the “California Hazardous Waste Permanent ID Number Application”, [DTSC Form 1358](#), by mail, email, or fax. You can download the form from the [DTSC website](#) or you can request a blank form by calling DTSC at 800-618-6942. DTSC no longer issues permanent ID Numbers by telephone.

Am I charged fees for the issuance of the ID Number?

There is no charge for issuing the number, but DTSC is required to collect an annual business information verification fee for each permanent ID Number. The fee is based on the number of employees in the entire organization. If your business has fewer than 50 employees, the fee is zero. There is no verification fee for a Temporary ID Number. [Frequently Asked Questions](#) about the ID Number verification process and manifest fees are available on the DTSC website.

I usually don't generate hazardous waste, but I recently generated some. Can I get a temporary EPA ID Number for this one time event?

DTSC issues temporary (or “provisional”) ID Numbers to people or businesses that do not routinely generate hazardous waste. Examples of non-routine activities include asbestos abate-

ment, removing underground tanks, and removing hazardous wastes that were abandoned in a leased building. A California temporary number is only valid for non-RCRA (California only) waste or when the total RCRA waste hauled is less than 220 pounds or 27 gallons per month. To get a California temporary ID Number, call DTSC at (800) 618-6942 (in-state) or (916) 255-1136 (out-of-state.) U.S. EPA also issues provisional ID Numbers for non-routinely generated federal wastes. Temporary and provisional ID Numbers are valid for a maximum of 90 days but can be used to haul any amount of hazardous waste that has been generated at the site before and during that period. Holders of temporary Numbers are not charged EPA ID verification fees.

Do I need to get a new ID Number if I move my business?

Yes. If you have a California ID Number, submit one DTSC Form 1358 to deactivate your old number, and another to request that a number be issued for your new location. This is also true if you are selling or buying a business; the seller must inactivate the old number and have the new owner submit a [DTSC Form 1358](#) to have a new number issued. If you have a U.S. EPA ID Number, these actions are done through the use of Form 8700-12, “Notification of Regulated Waste Activity”.

I've always wondered: do the letters in front of the ID Numbers mean anything?

Early federally-issued ID Numbers had two letters corresponding to the generator's state and ten digits. Current ID Numbers consist of three letters followed by nine digits. The significance of those letters is as follows:

EPA ID Numbers

- CAR Federal permanent number currently being issued.
- CA Federal permanent number that preceded the CAR prefix. ID numbers with a CA prefix are still valid, but have not been issued since February 1995.
- CAD Federal permanent number that preceded the CA prefix, or a State permanent or provisional number issued before 1988. ID numbers with a CAD prefix have not been issued since August 1993.
- CAT Federal permanent number that preceded the CAD prefix.
- CAP Federal provisional or emergency number currently issued.

California ID Numbers

- CAL State permanent number.
- CAC State provisional or emergency number.
- CAH State provisional or permanent number issued for Household Hazardous Waste Collections.
- CAI State permanent number issued for Exotic Pest Detection.
- CAE State provisional number issued for removal of hazardous waste caused by a natural disaster.
- CAF State permanent number issued for farm used oil.
- CAS State permanent number issued for Emergency Response.
- CLU Clandestine Drug Lab cleanup.
- CAX State permanent or provisional number issued before 1987. A CAX number is no longer a valid ID number.
- CA99 State permanent number issued to cruise ships.

DTSC Regulatory Assistance Officers provide informal guidance regarding management of hazardous waste for the convenience of the public. Such advice is not binding upon DTSC, nor does it have the force of law. If you would like a formal opinion on a matter by DTSC, please contact the responsible program office directly.

You should also refer to the statutes and regulations, DTSC Policies and Procedures, and other formal documents.

If you cannot find the answer to your question in this fact sheet, contact your local DTSC Regulatory Assistance Officer directly. You can reach them toll-free at 800-728-6942, or contact them through email at RAO@dtsc.ca.gov.

**12. Hazardous Wastes of Concern - California
Department of Toxic Substances**

Fact Sheet
February 2004

Hazardous Wastes of Concern



HAZARDOUS WASTE MANAGEMENT

DTSC is one of six Boards and Departments within the California Environmental Protection Agency. DTSC's mission is to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California



California
Environmental
Protection Agency



In response to security concerns following the September 11, 2001 terrorist attack, legislation was passed [Senate Bill No. 489 (2001-2002 Reg. Session Romero)] that amended and enacted laws to increase the security of hazardous wastes. SB 489 amended Health and Safety Code §25112.5 and added Article 6.6 beginning with § 25169.5. The new law strengthens the security of hazardous waste that can be intentionally and effectively used to harm the public and or the environment. These wastes are called Hazardous Wastes of Concern (HWC).

The Department of Toxic Substances Control (DTSC) adopted emergency regulations implementing SB 489 that apply to any person handling HWC. The emergency regulations became effective on July 10, 2003.

- Any person handling HWC who discovers that a reportable quantity of a HWC is missing during transportation or storage must notify DTSC by phone within 24 hours and submit a written report within five days.
- Transporters and treatment, storage and disposal facilities (TSDFs) that handle HWC must submit a Disclosure Statement and fingerprints for a criminal background check unless the corporation is exempt.
- Transporters and TSDFs that handle HWC must submit a Disclosure Statement with a new or renewal application by and after January 1, 2004.

This fact sheet provides general information about laws affecting generators, TSDFs and transporters of HWC. Unless otherwise noted, all citations apply to Health and Safety Code §§ 25112.5 and 25169.5. Consult the statutes and regulations before making any decision that may affect regulatory compliance.

The text of the regulations and related information is available on DTSC's Web site at www.dtsc.ca.gov/LawsRegulationsPolicies/HWC/HWC_final_regs.html and in www.leginfo.ca.gov/calaw.html under Health and Safety Code, Division 20 Chapter 6.5, Article 6.6 and www.calregs.com/ under Title 22, Division 4.5.

What Wastes are Hazardous Wastes of Concern?

A HWC is a hazardous waste that is identified with one of the following hazard divisions under the Code of Federal Regulations, Title 49 (49 C.F.R.):

- An explosive material, hazard division 1.1, 1.2, or 1.3;
- A poisonous material, hazard division 6.1, packing group I or II; or
- A poisonous gas, hazard division 2.3 (Cal. Code Regs., Title 22, 66261.111(a)).

DOT Laws and regulations require that any person packaging and shipping hazardous materials, including hazardous wastes, must have completed training that enables them to properly identify, document, package and handle the hazardous materials they are offering for shipment. To determine if a hazardous waste is a HWC:

- The generator or generator's trained employees must compare the DOT hazard classes of their hazardous wastes with those listed in the HWC regulations, and identify HWC for enhanced tracking. Further, the generator must determine if the waste exhibits HWC characteristics by testing the waste according to the approved methods or applying knowledge of the hazards characteristic of the waste in light of the processes that the materials have undergone.
- Transporters and TSDFs must check the information on the manifest in Box 11 (U.S. DOT Description), the additional information in Box J (Additional Descriptions for Materials Listed Above), and the label and markings on the container. If in doubt, the transporter and TSDFs should verify the information with the generator of the waste.

Shipping names, hazard divisions, and packing groups are in 49 C.F.R. The Hazardous Materials Table is in 49 C.F.R Section 172.101. DTSC has prepared an excerpt with the names of the materials listed in the hazard divisions. The excerpt is available as a complete list on DTSC's Web site at www.dtsc.ca.gov/LawsRegulationsPolicies/HWC/hwm_regs_sb489_hwc-list.pdf or call 800-728-6942.

When to Make a Report

Missing HWC is defined as lost, stolen, or disappeared (Cal.Code Regs., Title 22, § 66261.111(b)). Any person handling HWC is required to report missing HWC when the missing waste is of a reportable quantity or a reportable difference in the type of wastes received by the transporter or TSDF, as compared to what is described on the manifest.

- **Reportable quantities**
 - a) bulk waste—a change of more than three percent in weight or volume.

b) containerized waste—a change in piece count, such as a difference of one drum in a truckload.

- **Reportable differences in type** are obvious differences that can be discovered by sight, inspection, or waste analysis. Examples of differences in type include waste caustic soda substituted for sodium cyanide, or waste containing hazardous constituents not reported on the manifest that would change the hazard class, the shipping name or waste code. Other examples: mineral spirits substituted for waste carbon tetrachloride; or soil substituted for any reactive or poisonous solid, etc.

To Report Missing HWC

Call DTSC's Complaint Hotline at 800-69-TOXIC (800-698-6942) within 24 hours of discovering that HWC is missing and provide the following:

- 1) Generator name and identification number
- 2) Transporter name, identification number, and, if available, transporter registration numbers
- 3) Destination facility name and identification number
- 4) Manifest number
- 5) Waste information (lines 11-14 of the manifest), including shipping name, hazard class or division, identification number, packing group, number of containers, container type (as listed in Table I of the Appendix to Chapter 12, Article 7), Quantity or volume of waste, weight or volume units, and waste codes
- 6) Location or transportation routes where the HWC was first noticed missing (for example: highway or road, rail line, transfer station, truck stop, etc.). Hazardous waste facilities reporting missing HWC during storage must identify the areas at the facility where the waste was handled.

Submit a written report with the above information, including resolution of the discrepancy or missing waste, within five days, to the appropriate address below.

For missing HWC in Los Angeles, Ventura, Santa Barbara, San Bernardino, Orange, Riverside, San Diego and Imperial Counties:

Complaint Coordinator
Department of Toxic Substances Control
Statewide Compliance Division
Glendale Branch
1011 North Grandview Avenue
Glendale, California 91201-2205

For counties not included in the Southern California list, or any out-of-state counties:

Complaint Coordinator
Department of Toxic Substances Control
Statewide Compliance Division
Northern California Branch
8800 Cal Center Drive
Sacramento, California 95826-3200

NOTE: In an emergency, contact law enforcement by calling 911, then contact DTSC.

Disclosure Statements

Anyone who transports HWC or operates a TSDf that handles HWC must provide DTSC with a Disclosure Statement when applying for a new permit, permit renewal, or modification to an authorization or permit issued by DTSC. A Disclosure Statement form is available on the Internet at www.dtsc.ca.gov/database/Publications/forms_index.cfm.

Sole proprietors, partners and officers, or directors as defined in Health and Safety Code, section 25112.5, are required to submit fingerprints with the Disclosure Statement. If there is a change in personnel in the above listed positions, then fingerprinting images and identification information must be submitted for the new individuals in those positions as well.

Corporate Exemptions

Some companies are exempt from submitting Disclosure Statements or from the fingerprint and background requirements:

- Publicly-held corporations that have operated as hazardous waste facilities or interim status facilities continuously since January 1, 1984, are exempt from the Disclosure Statement requirement under specified conditions, but they must submit SEC Annual Reports for the previous three years.

- Publicly-held corporations listed by the Securities and Exchange Commission (SEC), or wholly-owned subsidiaries of SEC-listed companies, are exempt from the fingerprint requirement.

Corporations eligible for the exemptions must report missing HWC and meet all of the requirements of Health & Safety Code §§ 25112.5(b) and (c). A transporter or TSDf that may qualify for a corporate exemption, should provide a letter to DTSC's Permit Program Development Section in Sacramento explaining the exemption eligibility.

To Submit a Disclosure Statement or for More Information

For more information about transporting HWC, call DTSC's Transportation Section at (916) 255-4368.

For information related to Disclosure Statements and TSDfs handling HWC contact:

Department of Toxic Substances Control
Hazardous Waste Management Program
Permit Program Development Section
Attention: Disclosure Statement Coordinator
P.O. Box 806, Sacramento, California 95812-0806
(916) 324-1806

For all other information related to HWC, please contact the DTSC office nearest you, or call the Regional Public and Business Liaisons at (800) 72TOXIC (800-728-6942).

DTSC Headquarters (916) 323-2678

Sacramento Office (916) 255-3617

Berkeley Office (510) 540-3739

Clovis Office (559) 297-3901

Glendale Office (818) 551-2830

Cypress Office (714) 484-5400

San Diego Office (619) 278-3734

or visit www.dtsc.ca.gov

13. Hazardous Waste Compliance Manual - Los Angeles County Fire Department – Health HazMat



Los Angeles County Fire Dept • Health Hazardous Materials Division
Certified Unified Program Agency • Participating Agency



**HAZARDOUS WASTE GENERATOR &
HAZARDOUS MATERIAL HANDLER
COMPLIANCE REFERENCE**

This reference contains a brief description of laws and regulations as they apply to both large and small quantity hazardous waste generators and hazardous materials handlers in the State of California. This document is intended to provide regulatory guidance only. This does not replace or supersede relevant statutes and regulations. The information contained in this guidance document is based upon the statutes and regulations in effect as of the revision date. Interested parties are advised to keep apprised of subsequent changes to relevant statutes and regulations.

Legal references

Health and Safety Code (HSC)
California Code of Regulations (CCR) Titles 19 & 22
Code of Federal Regulations (CFR) Title 40
Los Angeles County Code (CO ORD)

Internet addresses

www.leginfo.ca.gov/calaw.html
www.calregs.com
www.access.gop.gov/nara/cfr/cfr-retrieve.html#page1
<http://ordlink.com/codes/lacounty>

Large Quantity Generator (LQG):

1. Generate, in any calendar month, 1,000 kilograms (2,200 pounds) or more of hazardous waste; or
2. Generate, in any calendar month, more than 1 kilogram (2.2 pounds) of acutely hazardous waste (AHW) or 100 kilograms of debris resulting from the spill of an AHW; or
3. Accumulate on-site more than 6,000 kilograms (13,200 pounds) of hazardous waste at any time.

Small Quantity Generator (SQG):

A generator of hazardous waste who, in any calendar month, generates between 100 and 1,000 kilograms of hazardous waste in that month.

Conditionally Exempt Small Quantity Generator (CESQG):

A generator is a CESQG if no more than 100 kilograms of hazardous waste is generated in a month.

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1. CCR 66262.34(a) **LQG accumulation time** – Except for satellite accumulation wastes (See Item 2), maximum accumulation time may not exceed 90 days unless the generator has a hazardous waste storage permit or has received an extension from DTSC. There are no limits of quantity of waste stored onsite. The 90-day period begins on the first date on which any amount of hazardous waste begins to accumulate.
- CCR 66262.34(d) **SQG accumulation time** – Except for satellite accumulation wastes (See Item 2), maximum accumulation time may not exceed 180 days (270 days if the Treatment Storage Disposal Facility (TSDF) is 200 or more miles from generator’s facility or the generator is also the transporter of the waste) unless the generator has a hazardous waste storage permit or has received an extension from DTSC. The quantity of waste onsite may not exceed 6000kg and the generator may not hold acutely/extremely hazardous waste in an amount greater than one kilogram for more than 90 days. The generator must be in compliance with 40 CFR sections 262.34(d), (e), and (f). The 180-day period begins on the first date on which any amount of hazardous waste begins to accumulate.
- CCR 66262.34(a) **CESQG accumulation time** – Except for satellite accumulation wastes (See Item 2), maximum accumulation time may not exceed 90 days unless the generator has a hazardous waste storage permit or has received an extension from DTSC. For CESQGs the 90-day period begins on the date the generator has accumulated 100kg or 1kg of acutely/extremely hazardous waste.
[NOTE: CESQGs may also accumulate HW for 180/270 days if they comply with the SQG requirements contained in 40CFR 262.34(d), (e), and (f). CESQG are limited in the amount of HW that may be accumulated onsite pursuant to 40CFR 261.5(f)(2) and (g)(2).]

2. CCR 66262.34(e) **Satellite accumulation** – A generator may accumulate hazardous waste for up to one year if all of the following requirements are met:
- The waste must be accumulated in a container (not a tank) that is located at or near the point of waste generation;
 - The container must be under the control of the operator of the process generating the waste;
 - The initial date of accumulation (i.e. the date waste was first placed in the container) must be clearly marked on the container and visible for inspection;
 - The total amount of each waste stream present at each satellite accumulation point must not exceed 55 gallons of hazardous waste or 1 quart of acutely or extremely hazardous waste;
 - Within three days of reaching the 55 gallon or one quart limit, the container must be marked with the date the quantity limit was reached;
 - The generator must not hold the waste on-site for more than one year from the initial date of accumulation, or for longer than 90 days after reaching the 55 gallon or one quart satellite accumulation limit whichever occurs first.

The container must also meet requirements for labeling (Item 3), containers leaking/poor condition (Item 5), compatibility (Item 6), and closed containers (Item 7), per CCR 66262.34(e)(1)(D) and (E).

[NOTE: Laboratories have a different definition of “area” per HSC 25200.3.1]

3. CCR 66262.34(f) **Hazardous waste labeling** - The following information must be clearly marked on each container and tank holding a hazardous waste:
- The words “HAZARDOUS WASTE”
 - The accumulation start date for the waste (i.e. the date waste was first placed in the container). This date must be visible for inspection.
- Each container and portable tank must additionally be marked with the following:
- The composition of the waste;
 - The physical state of the waste (i.e. solid or liquid);
 - The hazardous properties of the waste (i.e. flammable, corrosive, reactive, toxic);

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cont.		<ul style="list-style-type: none"> ▪ The name of the waste generator; ▪ The address of the waste generator. <p>On waste transfer containers that are emptied daily, the words "EMPTIED DAILY" may be marked in place of the actual date.</p> <p><i>[NOTE: Additional DOT marking requirements must be met prior to off-site transportation. See Item 106]</i></p>
4.	CCR 66261.2(f)	<p><u>Hazardous materials storage</u> – Hazardous materials that are packaged in deteriorated or damaged containers must be packaged in sound or undamaged containers within 96 hours or be managed as a hazardous waste.</p> <p><u>Hazardous materials labeling</u> – Hazardous materials that are mislabeled or not adequately labeled must be properly labeled within 10 days or be managed as a hazardous waste.</p>
5.	LQG CCR 66265.171 as referenced by CCR 66262.34 (a)(1)	<p><u>Containers leaking/poor condition</u> - If a container holding a hazardous waste is not in good condition (e.g. severe rusting, apparent structural defects, etc.), or if it begins to leak, the generator must transfer the waste to a container that is in good condition.</p>
	SQG CFR 265.171 as referenced by CCR 66262.34 (d)(2)	
6.	LQG CCR 66265.172 as referenced by CCR 66262.34 (a)(1)	<p><u>Compatibility of Waste with Containers</u> - The owner or operator shall use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be transferred or stored, so that the ability of the container to contain the waste is not impaired.</p>
	SQG CFR 265.172 as referenced by CCR 66262.34 (d)(2)	
7.	LQG CCR 66265.173 (a) as referenced by CCR 66262.34 (a)(1)	<p><u>Closed containers</u> - Containers must always be closed during transfer and storage, except when it is necessary to add or remove waste, so that their ability to contain the wastes is not impaired. Containers are considered closed when all lids, gaskets, and locking rings are in place and secured.</p> <p><i>[Exception: <u>During accumulation</u>, containers holding non-dispersible waste solids (e.g. absorbents, rags, gloves, etc.) contaminated with non-volatile, non-poisonous substances are considered closed when kept covered by a lid.]</i></p>
7 cont.	SQG CFR 265.173(a) as referenced by CCR 66262.34 (d)(2)	

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8.	LQG CCR 66265.174 as referenced by 66262.34 (a)(1)	<u>Weekly container inspections</u> - Generators must inspect areas used for container storage or transfer at least weekly, looking for leaks and for deterioration of the containment system caused by corrosion or other factors.
	SQG CFR 265.174 as referenced by 66262.34 (d)(2)	
9.	LQG CCR 66265.177 (a-c) as referenced by 66262.34(a) (1)	<u>Separation of incompatible materials</u> – <ul style="list-style-type: none"> ▪ Wastes must not be placed in a container that holds an incompatible material, unless section CCR 66265.17(b) for LQG or CFR 265.17(b) for SQG is complied with. (See Item 108). ▪ Wastes must not be placed in an unwashed container that previously held an incompatible waste or material, unless section CFR 265.17(b) for SQG is complied with. (See Item 108). ▪ Wastes must be separated from incompatible materials transferred or stored nearby by means of a dike, berm, wall, or other appropriate device.
	SQG CFR 265.177 (a-c) as referenced by 66262.34 (d)(2)	
10.	LQG CCR 66265.194 as referenced by 66262.34 (a)(1)	<u>LQG Tank operating requirements, overflow and spill prevention</u> – <ul style="list-style-type: none"> ▪ Hazardous wastes or treatment reagents shall not be placed in a tank system if they could cause the tank, its ancillary equipment, or the secondary containment system to rupture, leak, corrode, or otherwise fail. ▪ Tanks holding hazardous waste must be provided with the following: <ul style="list-style-type: none"> ○ Spill prevention controls (e.g. check valves, etc.); ○ Overfill prevention controls (e.g. level-sensing devices, high level alarms, automatic feed cutoff, bypass to a standby tank, etc.); ○ In the case of uncovered tanks, at least 2 feet of freeboard to prevent overtopping by wave or wind action or by precipitation.
	SQG CFR 265.201(b) as referenced by 66262.34 (d)(2)	
10 cont.		<u>SQG Tank operating requirements, overflow and spill prevention</u> - <ul style="list-style-type: none"> ▪ Hazardous wastes or treatment reagents must not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life. ▪ Uncovered tanks must be operated to ensure at least 60 centimeters (2 feet) of freeboard, unless the tank is equipped with a containment structure (e.g., dike or trench), a drainage control system, or a diversion structure (e.g., standby tank) with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank. ▪ Where hazardous waste is continuously fed into a tank, the tank must be equipped with a means to stop this inflow (e.g., waste feed cutoff system or by-pass system to a stand-by tank).

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11.	LQG CCR 66265.195 as referenced by 66262.34 (a)(1)	<p><u>LQG Inspection of tank systems</u> - Generators must perform and document inspections of the following items at least once each operating day:</p> <ul style="list-style-type: none"> ▪ Overfill/spill control equipment to ensure good working order; ▪ Aboveground portions of the tank system, if any, to detect corrosion or leaks; ▪ Data gathered from monitoring equipment and leak detection equipment (e.g. pressure and temperature gauges, monitoring wells, etc.) to ensure that the tank system is being operated according to its design; ▪ Construction materials and the area immediately surrounding the externally accessible portions of the tank system including secondary containment structures to detect erosion or signs of leaks; ▪ For uncovered tanks, the level of waste in the tank to ensure compliance with freeboard requirements. ▪ Cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly: <ul style="list-style-type: none"> (1) the proper operation of the cathodic protection system shall be confirmed within six months after initial installation, and annually thereafter; and (2) all sources of impressed current shall be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).
	SQG CFR 265.201(d) as referenced by 66262.34 (d)(2)	<p><u>SQG Inspection of tank systems</u> – Generators who accumulate between 100 and 1,000 kg/mo of hazardous waste in tanks or tank systems that have full secondary containment and that either use leak detection equipment to alert facility personnel to leaks, or implement established workplace practices to ensure leaks are promptly identified, must inspect at least weekly, where applicable, the following areas:</p> <ol style="list-style-type: none"> (1) Discharge control equipment (e.g., waste feed cutoff systems, by-pass systems, and drainage systems) to ensure that it is in good working order; (2) Data gathered from monitoring equipment (e.g., pressure and temperature gauges) to ensure that the tank is being operated according to its design; (3) The level of waste in the tank to ensure compliance with § 265.201(b)(3); (4) The construction materials of the tank to detect corrosion or leaking of fixtures or seams; and (5) The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes) to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation). <p>Use of the alternate inspection schedule must be documented in the facility's operating record. This documentation must include a description of the established workplace practices at the facility</p> <p><i>[NOTE: Facilities that do not: (a) have full secondary containment; (b) use leak detection equipment to alert facility personnel to leaks; or (c) implement established workplace practices to ensure leaks are promptly identified must have daily inspections. See Item 113)</i></p> <p><i>[NOTE: As required by CFR 265.15(c), the owner or operator must remedy any deterioration or malfunction he finds.]</i></p>
12.	LQG CCR 66265.190 -202 as referenced by 66262.34 (a)(1)	<p>Please refer to the California CUPA Forum Hazardous Waste Above Ground Tank Requirements Guidance document.</p> <p>http://www.calcupa.net/programs/hazwaste/default.asp</p>
12 cont.	SQG CFR 265.201 as referenced by 66262.34	

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	(d)(2)	
13.	CCR 66261.7	<p>Empty hazardous materials containers - The definition of “empty” for containers or inner liners is that no material can be drained or poured from the container, or that no material remains in the container that can be removed by physical means.</p> <ul style="list-style-type: none"> ▪ Each empty container larger than 5 gallons that previously held a hazardous material must be marked with the date it was emptied and be shipped for recycling, reconditioning, or reclamation of its scrap value - or managed on-site in such a manner - within one year of being emptied. ▪ The name, street address, mailing address, and telephone number of the operator or owner where the empty container has been shipped shall be maintained for three years, and the generator shall provide this information upon request to the Department. <p><i>[Exceptions:</i> <i>(1) Containers returned to the supplier to be refilled are exempt;</i> <i>(2) Empty gas cylinders are exempt when cylinder pressure reaches atmospheric pressure; (3) Aerosol cans are exempt if they are not a RCRA-regulated hazardous waste or California extremely hazardous waste and they are emptied of contents and propellant to the maximum extent practical under normal use (i.e. no clogged valves);</i> <i>(4) Containers or container liners made of wood, paper, cardboard, fabric, or any other similarly absorptive materials must be managed as hazardous wastes if they were in direct contact with and have absorbed the hazardous material/waste they held;</i> <i>(5) Containers or container liners that have held RCRA acutely hazardous wastes or California extremely hazardous wastes must be managed as hazardous wastes unless triple rinsed or otherwise cleaned in a manner approved by DTSC.]</i></p>
14.	HSC 25250.4	<p>Used oil management - Used oil must be managed as a hazardous waste unless it is shown to meet one of the specifications for recycled oil in HSC 25250.1(b) or qualifies for a recycling exclusion under HSC 25143.2.</p>
15.	CCR 66266.130 & HSC 25250.22	<p>Used oil filters – Used oil filters must be managed like other hazardous wastes unless all of the following requirements are met:</p> <ul style="list-style-type: none"> ▪ The filters must be drained of free-flowing used oil. If the filter is equipped with a device (such as a rubber flap located just inside the filter opening) that impedes the drainage of oil from the filter, that device must be manipulated to allow the oil to exit the filter freely, or the filter punctured, crushed, opened, drained, or otherwise handled in a manner that will allow the oil to exit the filter; ▪ The drained filters must be accumulated, stored, and transferred in a rain-proof container that is capable of containing any oil that may separate from the filters. During transfer, containers must be sealed so that when they are laid on their sides, no oil will leak out; ▪ Containers must be labeled as “DRAINED USED OIL FILTERS” (not as hazardous waste) and marked with the initial date of filter accumulation or receipt; ▪ Filters in amounts less than one ton must not be accumulated/stored on site longer than one year (180 days for amounts equal to or greater than one ton); ▪ Filters must be transported to a smelter or other scrap metal processor for recycling, or to a storage or consolidation facility that later transfers them to such a recycler.
15 cont.		<p>Recordkeeping - Persons generating, transporting, or receiving used oil filters must use a bill of lading to record the transfer of filters. The bills of lading must be kept on the premises of the generator, transporter, and receiving facilities for at least 3 years from the date of shipment. Bills of lading must include:</p> <ul style="list-style-type: none"> ▪ The generator’s company name, address, and telephone number; ▪ The transporter’s company name, address, and telephone number; ▪ The receiving facility’s company name, address, and telephone number; ▪ The quantity and size of each used oil container shipped; ▪ The date of transfer.

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16.	CCR 66266.81	<p><u>Spent lead-acid storage batteries</u> - A person who generates in one year, stores at one time, or transports at one time in one vehicle 10 or fewer spent batteries that have been removed from motor vehicles or are equivalent in type and equivalent to, or smaller in size than, such batteries is exempt from managing those batteries as hazardous waste provided that the batteries are transferred to a person who recycles, uses, reuses, or reclaims the batteries or who stores them for eventual management in that manner. Damaged batteries must be managed to minimize the release of acid and lead and to protect handlers and the environment. Containers holding damaged batteries must be conspicuously marked in a weather-resistant manner with the date that the first battery was placed inside the container. Transfers of spent batteries must be recorded on manifests or bills of lading that:</p> <ul style="list-style-type: none"> ▪ Meet the shipping paper requirements contained in 49 CFR, Part 172, Subpart C and 49 CFR §177.817; ▪ Are kept at the generator's, transporter's, and receiving facility's places of business for at least 3 years from date of shipment.
17.	HSC 25144.6	<p><u>Contaminated textiles</u> - Textile materials (e.g. shop towels, uniforms, gloves, linens, etc.) that have become soiled with hazardous waste during commercial or industrial use are exempt from using hazardous waste haulers and paying State hazardous waste fees if <u>all</u> the following requirements are met:</p> <ul style="list-style-type: none"> ▪ They are made reusable by laundering or comparable methods of cleaning at a facility (i.e. commercial laundry) with a Contingency Plan for handling both on-site and off-site emergencies involving the materials and which maintains records of the date, type, and quantities by piecework or weight of the materials laundered; ▪ They are not subject to federal regulation as hazardous wastes; ▪ They are not used to clean up or control a spill that is required to be reported to any state or federal agency; ▪ No hazardous waste has been added after the materials' original use; ▪ No free liquids are released during transportation or storage of the materials.
18.	CCR 66262.12	<p><u>EPA ID number</u> - A facility or individual must not treat, store, dispose of, transport, or offer for transportation a hazardous waste unless an EPA ID number has been obtained. State-issued numbers are site-specific and owner-specific, so if a facility moves or changes ownership, a new number must be obtained. Each facility may have only one EPA ID number. All generators, other than CESQGs who generate no more than 100 kg per month of silver-only wastes from photo developing, must have an EPA ID number. Generators that generate 1 kg or more of RCRA acutely HW per month or 100 kg or more of RCRA HW per month must obtain a federally issued number.</p>
18 cont.		<p><i>[NOTE: State issued numbers begin with the letters CAL; federally issued numbers begin with the letters CAD. Provisional EPA ID Numbers (those that begin with the letters CAC or CAP) are only valid for 90 days. To obtain an EPA ID number from the state, call (800) 618-6942. RCRA SQGs and LQGs must obtain an EPA ID number from the US EPA at (415) 495-8895.]</i></p>
19.	CCR 66262.23(a)	<p><u>Manifest complete</u> – The generator of any hazardous or extremely hazardous waste to be transported off-site or into California shall:</p> <ul style="list-style-type: none"> ▪ complete the generator and waste section and sign the manifest certification according to the instructions in the Appendix to this chapter; and ▪ obtain the handwritten signature of the initial transporter and date of acceptance on the manifest; and ▪ retain one copy, in accordance with section 66262.40(a); and ▪ for non-RCRA waste, describe these wastes in Item 9b of the manifest or Item 27b of the continuation sheet.
20.	CCR 66262.23(a)(4)	<p><u>Manifest copies to DTSC</u> - Within 30 days of each hazardous waste shipment, the generator must submit to the DTSC a legible copy of each manifest used.</p>
21.	CCR 66262.40(a)	<p><u>Manifest retention</u> - A copy of each signed hazardous waste manifest must be kept until</p>

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the generator receives a signed copy from the TSDF designated to receive the waste. Each TSDF-signed manifest copy must be kept for at least 3 years from the date of waste shipment.

22. HSC 25160.2

Consolidated manifest requirements – Consolidated manifesting allows certain registered haulers to combine, on a single manifest, specified wastes from multiple generators. Generators using this procedure are exempt from filling out a hazardous waste manifest. Generators using this procedure must have an EPA ID number.

Only non-RCRA wastes (or RCRA hazardous wastes not required to be manifested) are allowed under the consolidated manifesting procedure. Specified wastes include used oil, used coolant, parts cleaning solvent, metal sludge from wastewater treatment, paint waste, photo developing waste, dry cleaning waste, asbestos, ink waste, lab packs from K-12 schools, spent absorbents, waste from disabled vehicles and gasoline/diesel pump filters. Generators of less than 1,000 kg per month of hazardous waste that comply with SQG requirements can use this procedure. The generator may exclude the volume of used oil and contents of oil/water separators generated in calculating the 1,000 kg per month.”, in accordance with 25160.2(b) [includes RCRA HW] and with HSC 25123.3(h)(1) [HWG generate less than 1,000 kg per month of HW and meets other SQG requirements] as referenced by 25160.2(c)(2)(B).

Generators must keep receipts for three years. Receipts must contain the following information:

- Generator name, address, telephone number, EPA ID number, contact person, generator representative signature;
- Shipment date;
- Manifest number;
- Waste volume;
- Waste codes;
- Waste type;
- Proper shipping name including hazard class and UN/NA number, if applicable;
- Transporter name, address and EPA ID number;
- Driver signature;
- TSDF name, address and EPA ID number;
- A statement (signed by the generator) certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree (as determined by the generator) to be economically practicable.

**22
cont.**

[Exception: The only group excluded from the EPA ID number requirement is generators of less than 100 kilograms per month of “silver only” hazardous waste or wastes that are hazardous solely due to the presence of silver. See Item 18.]

23. CCR 66262.42

Manifest exception reporting - Generators that do not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 35 days of the date the waste was accepted by the initial transporter shall contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.

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If the generator has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 45 days of the date the waste was accepted by the initial transporter, they are required to submit an Exception Report to the DTSC. The Exception Report shall include:

- a legible copy of the manifest for which the generator does not have confirmation of delivery;
- a cover letter signed by the generator or the generator's authorized representative explaining the efforts taken to locate the hazardous waste and the results of those

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efforts.

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If the generator has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility to which the generator's waste is submitted, within 60 days from the date that the hazardous waste was accepted by the initial transporter, they are required to submit to the department a legible copy of the manifest, with some indication that the generator has not received confirmation of delivery.

Generators shall submit the exception report or information to the department at:
DTSC Report Repository
Generator Information Services Section
P.O. Box 806
Sacramento, CA 95812-0806

24. CCR 66262.20 **Hazardous waste transported with manifest** - For shipments initiated on and after September 5, 2006, a generator who transports, or offers for transport a hazardous waste for off-site transfer, treatment, storage, or disposal, or a treatment, storage, and disposal facility who offers for transport a rejected hazardous waste load, shall prepare a Uniform Hazardous Waste Manifest (OMB Control number 2050-0039) on EPA Form 8700-22, and, if necessary, a Continuation Sheet on EPA Form 8700-22A before the waste is transported off-site.
- A generator shall designate on the manifest one facility which is permitted to handle the waste described on the manifest.
 - A generator may also designate on the manifest one alternate facility which is permitted to handle the waste in the event an emergency prevents delivery of the waste to the primary designated facility.
 - If the transporter is unable to deliver the hazardous waste to the designated facility or the alternate facility, the generator shall either designate another facility or instruct the transporter to return the waste.
- [Exception: A generator who qualifies as a contributing school, as defined in section 67450.41(a)(3) of chapter 45, is not subject to the provisions of this article for transportation of hazardous wastes to a K-12 schools hazardous waste collection, consolidation, and accumulation facility (SHWCCAF) in accordance with article 5 of chapter 45 as long as the generator also maintains compliance with the provisions of article 5 of chapter 45 (commencing with section 67450.40) that are applicable to contributing schools.]*
25. HSC 25163(a) **Hazardous waste transported by registered hauler** – It is illegal for a person to transport a hazardous waste unless that person holds a valid transporter registration issued by DTSC. It is illegal for any person to transfer custody of hazardous waste to a transporter who does not hold such a registration.
- [NOTE: There are some exceptions to these requirements. See HSC 25163(b), (c), (e), and (f)]*
- [Exception: Per HSC 25250.11(b), the generator of used oil may transport up to 55 gallons of used oil. See Item 104]*
26. CCR 66268.7(a) **LDR document retention** – Generators of hazardous waste shall determine if the waste has to be treated before it can be land disposed. Retain in facility files all waste analyses, notifications and other LDR documentation.
- [Exception: Manifests are required but not LDRs for CESQG per CCR66268.1(e)]*
27. CCR 66262.40(c) **Hazardous waste analysis retention** – Copies of test results, waste analyses, or other hazardous waste determination records must be kept for at least 3 years from the date the waste was last sent for on-site or off-site treatment, storage, or disposal.
28. CCR 66262.11 **Hazardous waste determination** - The generator of a waste must determine whether the

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waste is a hazardous waste by determining whether it is included on one of the lists of materials classified as hazardous wastes or meets the criteria for one or more characteristics (i.e. ignitability, reactivity, corrosivity, or toxicity) that would make it a hazardous waste by either:

- Having the waste tested by a laboratory certified by the State of California to perform waste determination analyses; or
- Applying the generator's knowledge of the hazardous properties of the waste in light of the materials and processes involved in the generation of the waste.

Waste determinations should be documented and kept at the facility available for inspection.

29. HSC 25189.5(a) **Proper disposal of hazardous waste** - It is illegal to dispose of a hazardous waste to:
- A facility that is not permitted by the Department of Toxic Substances Control (DTSC) to accept such a waste;
 - A sewer or septic system;
 - The trash or dumpster;
 - A storm drain;
 - The ground; or
 - Any other location that is not authorized to receive such waste.

30. HSC 25189.6 **Reckless management of hazardous waste** – Any person who knowingly, or with reckless disregard for the risk, treats, handles, transports, disposes, or stores any hazardous waste in a manner which causes any unreasonable risk of fire, explosion, serious injury, or death is guilty of a public offense. Any person who knowingly, at the time the person takes the actions specified above, places another person in imminent danger of death or serious bodily injury, is guilty of a public offense.

31. HSC 25187.6 **Quarantine Order** - If an authorized agent of the department has probable cause to believe that any hazardous waste, or any material which the authorized agent reasonably believes to be a hazardous waste, is stored, transported, disposed of, or handled in violation of HSC Chapter 6.5 or in a manner that will constitute a violation of this chapter, and that the violation may threaten public health and safety, or the environment, the agent may issue an order of quarantine by affixing a tag or other appropriate marking to the container containing, or to the vehicle transporting, the hazardous waste.

31 cont. The authorized agent shall notify the person who owns the hazardous waste, or the owner or lessee of the vehicle in which the

wastes are transported, of all of the following:

- The hazardous waste has been subject to a quarantine order because the hazardous waste is, or is suspected of being, stored, transported, disposed of, or handled in violation of this chapter.
- No person shall remove, transfer, or dispose of the hazardous waste until permission for removal, transfer, or disposal is given by an authorized agent of the department or by a court.
- The person so notified may request, and shall be granted, an immediate hearing before a person designated by the director to review the validity of the authorized agent's order. For purposes of this section, an immediate hearing shall be held within 24 hours after a hearing is requested by the person subject to the order.

Any order of quarantine issued shall take effect upon issuance and shall remain effective for 30 days thereafter, until an authorized agent removes the quarantine order or until the quarantine order is revoked pursuant to a hearing conducted, whichever event occurs first. If an authorized agent of the department determines that a hazardous waste subject to a quarantine order is not being stored, handled, transported, or disposed of in violation of this chapter, or does not threaten public health and safety or the environment, the authorized agent shall revoke the order of quarantine.

If an authorized agent of the department has probable cause to believe that a hazardous waste subject to a quarantine order will, or is likely to, be removed, transferred or disposed of in violation of this section, the authorized agent may remove the hazardous waste to a

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place of safekeeping.

A hazardous waste in transit for which a quarantine order has been issued shall be stored or held at one of the following locations, which the authorized agent determines will represent the least risk to the public health and safety or the environment:

- The facility owned or operated by the producer of the waste, except when the producer is located outside the state.
- The transporter's yard, facility, or terminal.
- The treatment, storage, or disposal facility to which the hazardous waste is to be transported.
- Any other site designated by the authorized agent.

All fees for storage and any other expenses incurred in carrying out subdivision (e) or (f) shall be a charge against the person who owns the hazardous waste or the owner or lessee of the vehicle in which the wastes are transported.

For purposes of this section, "authorized agent of the department" includes any representative of a local officer or agency authorized to enforce this chapter pursuant to subdivision (a) of Section 25180.

32. LQG CCR
66265.31
as
referenced
by
66262.34
(a)(4)

Maintenance and operation of facility - Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment.

SQG CFR
265.31
as
referenced
by CCR
66262.34
(d)(2)

33. LQG CCR
66265.32
-33
as
referenced
by CCR
66262.34
(a)(4)

Required equipment (66265.32/265.32) - All facilities shall be equipped with the following, unless it can be demonstrated to the Department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

- an internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;
- a device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;
- portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and
- water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

33
cont.

SQG CFR
265.32-
.33
as
referenced
by CCR
66262.34
(d)(2)

Testing and Maintenance of Equipment (66265.33/265.33) - All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.

34. LQG CCR
66265.35
as
referenced
by
66262.34
(a)(4)

Aisle space - The owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the Department that aisle space is not needed for any of these purposes.

SQG CFR
265.35
as

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	referenced by CCR 66262.34 (d)(2)	
35.	LQG CCR 66265.16 as referenced by CCR 66262.34 (a)(4)	<p><u>LQG Personnel training requirements</u> – All personnel at the facility involved in the management (i.e., generation, transfer, shipment, etc.) of hazardous waste must receive classroom instruction or on-the-job training in the proper management of hazardous waste. This training must:</p> <ul style="list-style-type: none"> ▪ Be directed by a person trained in hazardous waste management procedures; ▪ Include instruction that teaches personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed (e.g. personnel who prepare or sign hazardous waste manifests must be trained in manifest requirements, those who label containers must be trained in labeling requirements, etc.) ▪ Be designed to ensure that personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, equipment, and systems ▪ Be provided to personnel within six months after the date of their employment or assignment to a new facility, or to a new position at a facility. <p><i>[NOTE: Personnel who have not yet completed this training must work under the supervision of a properly trained person.]</i></p> <ul style="list-style-type: none"> ▪ Be reviewed annually through refresher training; ▪ Be documented by records that include: <ul style="list-style-type: none"> ▪ The job title for each position related to hazardous waste management, and the name of each employee filling the job; ▪ A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to each position; ▪ A written description of the type and amount of both introductory and continuing training that will be given to each person filling the above job positions; ▪ Documentation that this training has been given to, and completed by, facility personnel. <p>Hazardous waste management training records on current personnel must be kept until closure of the facility. Records on former employees must be kept for at least three years from the date the employee last worked at the facility.</p>
35 cont.	SQG CFR 262.34(d) (5)(iii) as referenced by CCR 66262.34 (d)(2)	<p><u>SQG Personnel training requirements</u> – The generator must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies;</p>
36.	CFR 262.34(d)(5)(ii) as referenced by CCR 66262.34 (d)(2)	<p><u>SQG Emergency information posting</u> – The generator must post the following information next to the telephone:</p> <ul style="list-style-type: none"> ▪ The name and telephone number of the emergency coordinator; ▪ Location of fire extinguishers and spill control material, and, if present, fire alarm; and ▪ The telephone number of the fire department, unless the facility has a direct alarm.
37.	CCR 66265.11 As referenced by CCR 66262.34(a)(1)	<p><u>LQG Contingency Plan Established</u> – Each owner or operator shall have a contingency plan for the facility. The contingency plan shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.</p> <p><u>LQG Contingency Plan Implementation</u> - The provisions of the plan shall be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment. <i>[NOTE: Small quantity generators do not need a contingency plan. See Item 36]</i></p>

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[NOTE: The Consolidated Contingency Plan, if properly completed and implemented, will meet these two requirements.]

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|-----|------------------------------------|--|
| 38. | CCR 67100.3 | <p>SB 14 Requirements for LQG - Facilities which routinely generate >12,000 kg/year (26,400 lbs or 3,165 gals) of hazardous waste must:</p> <ul style="list-style-type: none"> ▪ Prepare a Source Reduction Plan – the plan for reducing waste over the next four years; ▪ Prepare a Hazardous Waste Management Performance Report - assesses improvement in waste reduction in the last four years; ▪ Prepare (and submit to DTSC) a Summary Progress Report (SPR) – compares current waste generation quantities with last reporting year quantities; ▪ Plan and reports must be prepared every four years. For example, in the reporting year 2002 documents are to be completed (and SPR submitted) by September 1 of 2003; ▪ Copies of the Plan, Report and SPR must be kept onsite; ▪ A “Small Business” can substitute the Checklist for the Plan, and the SPR for the Report. |
| 39. | CCR 66262.40-.41 | <p>Biennial Report - Generators subject to the requirement (RCRA LQG) to file Biennial Reports must submit a properly completed report to DTSC by March 1 of each even-numbered year. Report copies must be retained for three years.</p> |
| 40. | CCR 66265.111 & 66265.114 | <p>Closure requirements – Facility closure must:</p> <ul style="list-style-type: none"> ▪ Minimize the need for further maintenance; ▪ Decontaminate and/or remove all contaminated equipment, structures and soil; ▪ Ensure the protection of human health and the environment; ▪ Any hazardous wastes generated from closure shall be properly disposed of and manifests available for inspection. |
| 41. | HSC 25187(a)(1) & 25404.1(a)(3)(B) | <p>Site assessment requirements – Need guidelines from the Site Mitigation Unit (SMU) which define Inspection Unit responsibility for site assessment/remediation. Identify SMU referral protocols.</p> |
| 42. | HSC 25143.2(d) | <p>Excluded recyclable material transportation - Excluded recyclable material can be transported between locations operated by the same person who generated the material if <u>all</u> of the following requirements are met:</p> <ul style="list-style-type: none"> ▪ The destination location recycles the material or sends it to an authorized off-site hazardous waste facility for recycling; ▪ The material must be transported by employees of the generator or by a registered hazardous waste hauler under contract to the generator; ▪ The material must not be held at any interim location; ▪ The following information is maintained in an operating log at the destination location and kept for at least 3 years after receipt of the material: <ul style="list-style-type: none"> ▪ The name and address of each location contributing material to each shipment; ▪ The quantity and type of material contributed by each generator to each shipment; ▪ The destination and intended disposition of all material shipped off-site or received; ▪ The date of each shipment received or shipped off-site. |
| | HSC 25143.2(f) | <p>Excluded recyclable material record keeping - Any person who manages a recyclable material under a claim that the material qualifies as an excluded or exempted recyclable material pursuant to HSC §25143.2 must maintain and provide, upon request, to the CUPA the following information:</p> <ul style="list-style-type: none"> ▪ The name, street and mailing address, and telephone number of the owner or operator of any facility that manages the material; ▪ Adequate records to demonstrate to the satisfaction of the CUPA that there is a known market or disposition for the material and that the requirements of any exemption or exclusion pursuant to HSC §25143.2 are met; ▪ Other information related to the management of the material requested by the CUPA. |

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	HSC 25143.9	<p><u>Excluded recyclable material operating requirements</u> - The following storage and handling requirements must be met:</p> <ul style="list-style-type: none"> ▪ The owner or operator of the facility where excluded recyclable materials are located must have a Hazardous Materials Business Plan meeting the requirements of HSC §25504; ▪ The material must be stored and handled in accordance with all local ordinances and codes governing storage and handling of hazardous material; ▪ Containers or tanks must be marked with the following information: ▪ The accumulation start date for the material (i.e. the date material was first placed in the container); ▪ The words "EXCLUDED RECYCLABLE MATERIAL." ▪ If the material is used oil, the containers, aboveground tanks, and fill pipes used to transfer oil into underground storage tanks shall also be labeled or clearly marked with the words "Used Oil". <p>Each container and portable tank must additionally be marked with the following:</p> <ul style="list-style-type: none"> ▪ The composition of the material; ▪ The physical state of the material (i.e. solid or liquid); ▪ The hazardous properties of the material (i.e. flammable, corrosive, reactive, toxic); ▪ The name and address of the generator of the material.
43.	HSC 25143.10	<p><u>Recycling reporting</u> - Any person who recycles more than 100 kilograms (220 pounds) per month of recyclable material under a claim that the material qualifies for exclusion or exemption from hazardous waste requirements pursuant to HSC §25143.2 must complete and submit the following documents to the CUPA:</p> <ul style="list-style-type: none"> ▪ Unified Program Consolidated Form: Business Activities page; ▪ Unified Program Consolidated Form: Business Owner/Operator Identification page; ▪ Unified Program Consolidated Form: Recyclable Materials Report. <p>This report is for two calendar years and is due on July 1 of every even-numbered year.</p>
44.	CCR 66273.1-.8 HSC 25201.16 (Aerosol cans)	<p><u>Universal Waste Requirements</u> - This chapter establishes requirements for managing universal wastes, as defined in section 66273.9. The following universal wastes are subject to regulation pursuant to this chapter:</p> <ul style="list-style-type: none"> ▪ Batteries, as described in section 66273.2, subsection (a); ▪ Electronic devices, as described in section 66273.3, subsection (a); ▪ Mercury-containing equipment, as described in section 66273.4, subsection (a); ▪ Lamps, as described in section 66273.5, subsection (a) (including, but not limited to, M003 waste ▪ Cathode ray tubes, as described in section 66273.6, subsection (a); ▪ Cathode ray tube glass, as described in section 66273.7, subsection (a); and ▪ Aerosol cans, as specified in Health and Safety Code section 25201.16.
45.	See 100 - 130 below	<p><u>Other violations</u> – If this box is checked the inspector has written in a violation not listed in #1 – 44. These can be the “write-in” violations listed below or any other violation that the inspector deems appropriate.</p>
50.	HSC 25503.5	<p><u>HMBP Established & Implemented</u> – If a business handles a hazardous material or a mixture containing a hazardous material that has a quantity at any one time during the reporting year that is any of the following:</p> <ul style="list-style-type: none"> (A) Equal to, or greater than, a total weight of 500 pounds or a total volume of 55 gallons. (B) Equal to, or greater than, 200 cubic feet at standard temperature and pressure, if the substance is compressed gas. (C) If the substance is a radioactive material, it is handled in quantities for which an emergency plan is required to be adopted pursuant to Part 30 (commencing with Section 30.1), Part 40 (commencing with Section 40.1), or Part 70 (commencing with Section 70.1), of Chapter 1 of Title 10 of the Code of Federal Regulations, or

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pursuant to any regulations adopted by the state in accordance with those regulations.

They shall establish and implement a business plan for emergency response to a release or threatened release of a hazardous material in accordance with the standards prescribed in the regulations adopted pursuant to HSC Section 25503

[NOTE: There are exceptions to the reporting of hazardous materials for Retail stores (HSC 25503.5(c)(1), Lubricating oil (HSC 25503.5(b)(2)(A)(B), Farms (HSC 25503.5(c)(5), Unstaffed remote facilities (HSC 25503.5(c)(6), Propane HSC 25503.5(d), and Marine and rail transportation containers HSC 25503.7.]

[NOTE: A HMBP is also required if a business handles hazardous materials in quantities equal to or greater than the applicable federal threshold planning quantity for an extremely hazardous substance listed in Appendix A, Part 355, of 40CFR per 19CCR 2729.1.]

[NOTE: A Consolidated Contingency Plan, if properly completed and implemented, will meet this requirement for the HMBP.]

51. HSC 25505

HMBP Submitted; Updated/Accurate - Each handler shall submit its business plan to the CUPA and certify that the business plan meets all requirements. If, after review, the CUPA determines that the handler's business plan is deficient in any way, the CUPA shall notify the handler of those deficiencies. The handler shall submit a corrected business plan within 30 days from the date of the notice.

Whenever a substantial change in the handler's operations occurs that requires a modification of its business plan, the handler shall submit a copy of the business plan revisions to the CUPA within 30 days from the date of the operational change.

Each handler shall review the business plan at least once every three years thereafter after the initial submission of the business plan, to determine if a revision is needed and shall certify to the CUPA that the review was made and that any necessary changes were made to the plan. A copy of those changes shall be submitted to the CUPA as a part of that certification.

51 cont.

Each handler shall annually report its hazardous materials inventory or submit a certification statement to the CUPA in which the handler is located.

52. HSC25533(a)

Regulated Substance Registration – Any owner or operator of a stationary source that has more than a threshold quantity of a regulated substance (RS) in a process would be covered under CalARP Program. Owners or operators of stationary source must submit a Regulated Substance Registration form to the CUPA.

60. HSC 25270.4.5(a)

SPCC plan - Each owner or operator of a storage tank at a tank facility subject to this chapter shall prepare a spill prevention control and countermeasure plan prepared in accordance with Part 112 (commencing with Section 112.1) of Subchapter D of Chapter I of Title 40 of the Code of Federal Regulations.

Each owner or operator specified in this subdivision shall conduct periodic inspections of the storage tank to assure compliance with Section 112 (commencing with Section 112.1) of Subchapter D of Chapter I of Title 40 of the Code of Federal Regulations.

In implementing the spill prevention control and countermeasure plan, each owner or operator specified in this subdivision shall fully comply with the latest version of the regulations contained in Part 112 (commencing with Section 112.1) of Subchapter D of Chapter I of Title 40 of the Code of Federal Regulations.

70. CO ORD 12.50.075

Unified program permit – Every person, business, or business concern within the jurisdiction of the Los Angeles County Certified Unified Program Agency (LACoCUPA) and subject to the requirements of one or more of the program elements shall be required to obtain annually from the LACoCUPA a unified program facility permit for the program elements applicable to such facility.

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Owner/operators are required to pay the applicable annual fees and lat payments and maintain the permit posted in a conspicuous location at the facility.

Other Violation(s)

100. CCR 66270.1 as referenced by CCR 66262.10(h) **Transfer/Treatment/Storage/Disposal Permit** - A facility may not transfer (i.e. load, unload, pump, or package waste that is not generated on-site), treat, store (i.e. hold longer than applicable accumulation time limits), or dispose of a hazardous waste on-site without obtaining a permit from DTSC or Authorization from the CUPA.
- [NOTE: Treatment is defined as any method, technique, or process that changes or is designed to change the physical, chemical, or biological character or composition of a hazardous waste or any material contained therein, or removes or reduces its harmful properties or characteristics for any purpose including, but not limited to, energy recovery, material recovery, or reduction in volume. Examples include pH adjustment, precipitation, filtration, distillation, compacting, etc.]*
101. HSC 25201(a) **Authorization for storage/treatment** - An owner or operator must hold a hazardous waste facilities permit or other grant of authorization for the purpose of treating, disposing, storing, or accepting hazardous waste.
102. HSC 25189(a) **False or erroneous information** – Submission of manifests, records, applications or other documents containing false or erroneous information or statements is unlawful.
103. CCR 66262.53 **Hazardous waste export requirements** – Exports of RCRA hazardous waste to foreign countries are prohibited unless the following conditions are met:
- Notification to the EPA has been provided;
 - Consent of the receiving country has been obtained;
 - A copy of the EPA Acknowledgement of Consent accompanies the shipment;
 - The shipment conforms to the terms of the receiving country’s consent
104. SQG HSC 25250.11 **Self Transportation** – SQG may self transport Used Oil to Used Oil Collection Centers without a manifest provided that:
- The capacity of any single container does not exceed 55 gallons.
 - Each shipment of used oil does not exceed 55 gallons.
 - The person transporting the used oil had generated the used oil.
 - The person transporting the used oil does not transport greater than 20 gallons of used oil, and does not transport any used oil in any container exceeding 5 gallons in capacity, without first contacting the destination location described in subdivision (a) and verifying that the location will accept the used oil.
105. CCR 66262.21(f) **Manifest Submittals to DTSC** - Manifests shall be submitted to the department by any generator when the waste is generated in California or is transported to a designated facility located in California. The generator manifest copy shall be submitted to the department for every shipment on a manifest when California is either the generator state or the destination or consignment state.
106. CCR 66262.30-.33 **Pre-Transportation Requirements** – Prior to offering for transportation generators must package in DOT approved containers, label and mark in accordance with DOT, and ensure vehicle is placarded.
- [NOTE: CCR 66262.30 - Packaging, CCR 66262.31 - Labeling, CCR 66262.32 - Marking, and CCR 66262.33 – Placarding.]*
107. HSC 25217 **Recyclable latex paint management** – Liquid latex paint shall not be disposed to the land or waters of the State. Latex paint may be recycled at a facility that is not permitted by DTSC. The facility must handle the liquid latex paint safely, and provide a business plan. If

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the liquid latex paint is not recyclable, it must be managed as a hazardous waste. Bills of lading for management of recyclable latex paint shall be kept for a least three years and include:

- The name, address and telephone number of the generator, the transporter, and the facility managing the latex paint;
- The quantity of recyclable latex paint transported;
- The date of transportation;
- The signature of the transporter and the generator.

108. LQG CCR 66265.17 (b) **Ignitable and reactive waste** - The treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, must be conducted so that it does not:
 SQG CFR 265.17(b)
 (1) Generate extreme heat or pressure, fire or explosion, or violent reaction;
 (2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
 (3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
 (4) Damage the structural integrity of the device or facility containing the waste; or
 (5) Through other like means threaten human health or the environment.

109. LQG CCR 66265.173 (b) **Handle container to avoid leaks** – A container holding hazardous waste shall not be opened, handled, transferred or stored in a manner which may rupture the container or cause it to leak.
 as referenced by CCR 66262.34 (a)(1)

109 cont. SQG CFR 265.173 b) as referenced by CCR 66262.34 (d)(2)

110. CCR 66265.176 as referenced by CCR 66262.34(a)(1) **LQG Ignitable or reactive wastes** - Containers holding ignitable or reactive wastes must be located at least 50 feet from the facility's property line.
 [NOTE: This provision may also apply to an SQG operating a CA or PBR Treatment Unit.]

111. LQG CCR 66265.1087 **Subpart CC Air Emissions for Containers** - Applies if >26 gallons and holds a VOC containing waste of >500 ppm (by weight). Must accumulate in tightly closed DOT container only. CCR 66265.1087.
 Does not include containers in Satellite Accumulation Areas (CCR 66265.1080(a)/66265.1)
 [NOTE: There are different requirements based on the size and use of the containers – See CCR 66265.1086]

112. CCR 67383.3 **General Standards for Tank Systems / Tank Cleaning** – Facility owner/operators must complete and submit a Hazardous Waste Tank Closure Certification form to the CUPA prior to initiating any cleaning, cutting, dismantling, or excavation of a tank system that meets the conditions below:
 ▪ Any tank system that previously held a hazardous material or a hazardous waste that is identified as a hazardous waste and that is destined to be disposed, reclaimed or closed in place.

[NOTE - This does not apply to tank systems regulated under a hazardous waste facility permit, other than permit by rule (PBR), or to tank systems regulated under a grant of interim status, nor to a tank

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system or any portion thereof, that meets the definition of scrap metal in 22 CCR §66260.10 and is excluded from regulation pursuant to 22 CCR §66261.6(a)(3)(B).]
 [NOTE – See additional requirements under Item 117 for LQG and CA/PBR facilities.]

113. SQG CFR 265.201(c) **SQG Inspection of tank systems –**
 Generators who accumulate between 100 and 1,000 kg/mo of hazardous waste in tanks must inspect, where present:
- Discharge control equipment (e.g., waste feed cutoff systems, by-pass systems, and drainage systems) at least once each operating day, to ensure that it is in good working order;
 - Data gathered from monitoring equipment (e.g., pressure and temperature gauges) at least once each operating day to ensure that the tank is being operated according to its design;
 - The level of waste in the tank at least once each operating day to ensure compliance with § 265.201(b)(3) (i.e., 2 feet of freeboard in open tanks);
 - The construction materials of the tank at least weekly to detect corrosion or leaking of fixtures or seams; and
 - The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes) at least weekly to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

[NOTE: Facilities that (a) have full secondary containment; (b) use leak detection equipment to alert facility personnel to leaks; or (c) implement established workplace practices to ensure leaks are promptly identified may have weekly inspections. See Item 11.]

114. LQG CCR 66265.191 as referenced by CCR 66262.34 (a)(1) **Assessment of existing tank system's integrity** – An existing tank system that lacks secondary containment must have an integrity assessment to ensure it is not leaking or unfit for use. The written assessment must be reviewed and certified by a professional engineer. This assessment is only valid for one year.

115. LQG CCR 66265.192 as referenced by CCR 66262.34 (a)(1) **Design and installation of new tank systems or components** – Prior to placing into service, a new tank system must undergo an integrity assessment. The written assessment must be reviewed and certified by a professional engineer.

116. LQG CCR 66265.193 as referenced by CCR 66262.34 (a)(1) **Containment and detection of releases** – Secondary containment systems must be designed and operated to prevent the movement of wastes out of the tank system to the soil, groundwater or surface water. They must be capable of detecting and collecting releases.
 [NOTE: Ancillary equipment may be exempted if inspected daily. See CCR 66265.193(f).]

117. LQG CCR 66265.196 as referenced by CCR 66262.34 (a)(1) **Response to leaks or spills and disposition of leaking or unfit-for-use tank systems**
 - A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, shall be removed from service immediately, and the following requirements shall be satisfied:
- Implementation of general emergency procedures;
 - Cessation of use; prevention of flow or addition of wastes;
 - Removal of waste from tank or secondary containment system;

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		<ul style="list-style-type: none"> ▪ Contain visible releases to the environment ▪ Appropriate notifications/reports ▪ Provide secondary containment, repair, or close. <p>If the owner or operator has repaired a tank system and the repair has been extensive (e.g., installation of an internal liner; repair of a ruptured primary containment or secondary containment vessel), the tank system shall not be returned to service unless the owner/operator has obtained a certification by a professional engineer. This certification shall be submitted to the Department within seven days after returning the tank system to use.</p>
118.	LQG CCR 66265.197 as referenced by CCR 66262.34 (a)(1)	<p><u>Tank Closure</u> - A hazardous waste tank system must be closed by:</p> <ul style="list-style-type: none"> ▪ Removing and decontaminating all waste residues, contaminated tank systems, and soil; ▪ Identifying, managing and disposing of any hazardous wastes; <p>[NOTE: Submission of a completed "Hazardous Waste Tank Closure Certification" form to the CUPA. See Item 112.] [NOTE: Post-closure requirements apply if not all contaminated soils can be practicably removed or decontaminated]</p>
119.	LQG CCR 66265.198 as referenced by CCR 66262.34 (a)(1)	<p><u>Special Requirements for Ignitable or Reactive Wastes</u> -</p> <ul style="list-style-type: none"> • Ignitable or reactive waste shall not be placed in a tank system, unless: <ul style="list-style-type: none"> ▪ The waste is treated, rendered, or mixed before or immediately after placement in the tank system so that: <ul style="list-style-type: none"> ○ the resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under sections 66261.21 or 66261.23; and ○ section 66265.17(b) is complied with; or ▪ The waste is transferred, stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or ▪ The tank system is used solely for emergencies. • The owner or operator of a facility where ignitable or reactive waste is transferred, stored or treated in tanks shall comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code," (1981), (incorporated by reference, see section 66260.11).
119 cont.		
120.	LQG CCR 66265.199 as referenced by CCR 66262.34 (a)(1)	<p><u>Special Requirements for Incompatible Wastes</u> -</p> <p>Incompatible wastes, or incompatible waste and materials, shall not be placed in the same tank system, unless section 66265.17(b) is complied with.</p> <p>Hazardous waste shall not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless section 66265.17(b) is complied with. [NOTE: See Item 108]</p>
121.	LQG CCR 66265.1083 (b) and 66265.1085 (c)	<p><u>Subpart CC Air Emissions for Tanks</u> – Required Tanks <19,000 gal, holds VOC >500 ppm (by weight) needs fixed roof CCR 66265.1083(b) & 66265.1085(c))</p> <p>-Tank holding VOCs that does not meet criteria above, has cover and control/closures devices CCR 66265.1085(d)</p> <p>[NOTE: There are different requirements based on waste type and management of waste for tanks – See CCR 66265.1084]</p>

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122.	LQG CCR 66265.34 as referenced by CCR 66262.34 (a)(4)	<u>Access to communications or alarm system</u> - Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee. If there is ever just one person on the premises, the employee must have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio capable of summoning external emergency assistance.
	SQG CFR 265.34 as referenced by CCR 66262.34 (d)(2)	
123.	LQG CCR 66265.37 as referenced by CCR 66262.34 (a)(4)	<u>Arrangements with local authorities</u> - The facility owner or operator must attempt to make the following arrangements, as appropriate for the type of wastes handled at the facility and the potential need for the services of the response organizations: <ul style="list-style-type: none"> ▪ Arrangements to familiarize police, fire departments, emergency response teams, and the local Office of Emergency Services with the layout of the facility, properties of hazardous wastes handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;
	SQG CFR 265.37 as referenced by CCR 66262.34 (d)(2)	<ul style="list-style-type: none"> ▪ Agreements with emergency response contractors and equipment suppliers; ▪ Arrangements to familiarize local hospitals with the properties of hazardous wastes handled at the facility and the types of illnesses that could result from fires, explosions, or releases at the facility.
124.	LQG CCR 66265.52 as referenced by 66262.34 (a)(4)	<u>Contingency plan prepared/complete</u> - The facility must have a written plan that is kept current and includes the following information: <ul style="list-style-type: none"> ▪ A description of actions facility personnel will take to respond to fires, explosions, or any unplanned release of hazardous waste to air, soil, or surface water at the facility; ▪ A description of any arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services for the facility; ▪ The names, addresses, and phone numbers (office and home) of all persons qualified to act as Emergency Coordinator. Where more than one person is listed, one must be named as primary Emergency Coordinator, and the others must be listed in the order in which they will assume responsibility as alternates; ▪ A list of all emergency equipment at the facility [e.g. fire extinguishing and spill control equipment, communications and alarm systems (internal and external), and decontamination equipment, where such equipment is required]. It must include the location and physical description of each item, and a brief outline of its capabilities; ▪ An evacuation plan for facility personnel. The plan must describe signals used to begin evacuation, primary and alternate evacuation routes, and the current phone number for the State Office of Emergency Services.
125.	LQG CCR 66265.53 as referenced by 66262.34 (a)(4)	<u>Copies of contingency plan</u> - Copies of the plan and any revisions to it must be maintained at the facility and submitted to appropriate emergency response agencies.

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126.	LQG CCR 66265.54 as referenced by 66262.34 (a)(4)	<p><u>Amendment of contingency plan</u> - The Contingency Plan must be reviewed and, if necessary, immediately amended whenever:</p> <ul style="list-style-type: none"> ▪ Applicable regulations are revised; ▪ The plan fails in an emergency; ▪ The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste, or changes the response necessary in an emergency; ▪ The list of Emergency Coordinators changes; ▪ The list of emergency equipment changes.
127.	LQG CCR 66265.55 as referenced by 66262.34 (a)(4)	<p><u>Emergency coordinator</u> - At all times there must be at least one employee either on the premises or on call (i.e. available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response and reporting activities. This Emergency Coordinator must have the authority to commit the resources needed to carry out the Contingency Plan and be thoroughly familiar with the facility, all aspects of the Contingency Plan, and locations of all records within the facility.</p>
	SQG CFR 262.34 (d)(5)(i) (C) as referenced by CCR 66262.34 (d)(2)	
128.	LQG CCR 66265.56 (a-i) as referenced by CCR 66262.34 (a)(3)	<p><u>Emergency procedures</u> – Whenever there is an imminent or actual emergency situation, the emergency coordinator shall immediately:</p> <ol style="list-style-type: none"> (1) activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and (2) notify appropriate State or local agencies with designated response roles if their help is needed. <p>Whenever there is a release, fire, or explosion, the emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any released materials. Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the release, fire, or explosion.</p> <p>If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, the emergency coordinator shall report the findings as follows.</p> <ol style="list-style-type: none"> (1) If the emergency coordinator's assessment indicates that evacuation of local areas may be advisable, the emergency coordinator shall immediately notify appropriate local authorities. The emergency coordinator shall be available to help appropriate officials decide whether local areas should be evacuated; and (2) The emergency coordinator shall, in every situation, immediately notify the State Office of Emergency Services. The report shall include: <ol style="list-style-type: none"> (A) name and telephone number of reporter; (B) name and address of facility; (C) time and type of incident (e.g., release, fire); (D) name and quantity of material(s) involved, to the extent known; (E) the extent of injuries, if any; and (F) the possible hazards to human health, or the environment, outside the facility. <p>During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility.</p>
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If the facility stops operations in response to a fire, explosion or release, the emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate. Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

The emergency coordinator shall ensure that, in the affected area(s) of the facility:

- (1) no waste that may be incompatible with the released material is transferred, treated, stored, or disposed of until cleanup procedures are completed; and
- (2) all emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator shall notify the Department, and appropriate State and local authorities before operations are resumed in the affected area(s) of the facility.

The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner or operator shall submit a written report on the incident to the Department. The report shall include:

- (1) name, address, and telephone number of the owner or operator;
- (2) name, address, and telephone number of the facility;
- (3) date, time, and type of incident (e.g., fire, explosion);
- (4) name and quantity of material(s) involved;
- (5) the extent of injuries, if any;
- (6) an assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) estimated quantity and disposition of recovered material that resulted from the incident.

128 SQG CFR
cont. 262.34
(d)(5)(iv)
as
referenced
by CCR
66262.34
(d)(2)

Contingency Plan Activation / Notification - The emergency coordinator or his designee must respond to any emergencies that arise. The applicable responses are as follows:

- In the event of a fire, call the fire department or attempt to extinguish it using a fire extinguisher;
- In the event of a spill, contain the flow of hazardous waste to the extent possible, and as soon as is practicable clean up the hazardous waste and any contaminated materials or soil;
- In the event of a fire, explosion, or other release which could threaten human health outside the facility or when the generator has knowledge that a spill has reached surface water, the generator must immediately notify the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include the following information:
 - (1) The name, address, and U.S. EPA Identification Number of the generator;
 - (2) Date, time, and type of incident (e.g., spill or fire);
 - (3) Quantity and type of hazardous waste involved in the incident;
 - (4) Extent of injuries, if any; and
 - (5) Estimated quantity and disposition of recovered materials, if any.

129. CFR 112.3 (g)

APSA Qualified Facilities - The owner or operator of a qualified facility as defined in this subparagraph may self certify his facility's Plan. A qualified facility is one that meets the following Tier I or Tier II qualified facility criteria:

- (1) A Tier I qualified facility meets the qualification criteria in paragraph (g)(2) of this section and has no individual aboveground oil storage container with a capacity greater than 5,000 U.S. gallons.
- (2) A Tier II qualified facility is one that has had no single discharge exceeding 1,000 U.S. gallons or no two discharges each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan self-certification date, or since

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		becoming subject to this part if the facility has been in operation for less than three years, and has an aggregate aboveground oil storage capacity of 10,000 U.S. gallons or less.
130.	CFR 112.5	<p><u>APSA Amendments/Review</u> –</p> <p>(a) Amend the SPCC Plan for your facility when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge within six (6) months, and implemented as soon as possible, but not later than six (6) months following preparation of the amendment.</p> <p>(b) All SPCC plans shall be reviewed and evaluated once every 5yrs. <i>[NOTE: Plans that were in place prior to August 16, 2002 must be reviewed every 3 years.]</i></p>
131.	CFR 112.6 (b)	<p><u>APSA Tier II Qualified Facilities Preparation and Self-Certification of Plan</u> – Tier II facilities must complete a full self-certified SPCC Plan.</p>
132.	HSC 25270.4.5(b)	<p><u>APSA SPCC Exemption</u> - A tank facility located on a farm, nursery, logging site, or construction site is not subject to subdivision (a) if no storage tank at the location exceeds 20,000 gallons and the cumulative storage capacity of the tank facility does not exceed 100,000 gallons. The owner or operator of a tank facility exempt pursuant to this subdivision shall take the following actions:</p> <ol style="list-style-type: none"> (1) Conduct a daily visual inspection of any storage tank storing petroleum. (2) Allow the UPA to conduct a periodic inspection of the tank facility. (3) If the UPA determines installation of secondary containment is necessary for the protection of the waters of the state, install a secondary means of containment for each tank or group of tanks where the secondary containment will, at a minimum, contain the entire contents of the largest tank protected by the secondary containment plus precipitation.
133.	HSC 25270.8	<p><u>APSA Release Reporting</u> – APSA facilities shall report petroleum releases of one barrel (i.e., 42 gallons) or greater. Refer to Tier I/II Template for reporting requirements and forms.</p>
134.	CCR 66273.31	<p><u>Universal Waste Prohibition</u> – A universal waste handler is:</p> <ol style="list-style-type: none"> (a) Prohibited from disposing of universal waste and (b) Prohibited from diluting or treating universal waste, except by responding to releases as provided in section 66273.37 (See Item 144), or by managing specific wastes as provided in sections 66273.33 (See Items 135-137) and 66273.33.5 (See Item 138-140). <i>[Note: A universal waste handler may send or take batteries, thermostats, mercury-added novelties containing no liquid mercury, and mercury-containing rubber flooring that are universal wastes to a destination facility for disposal]</i>
135.	CCR 66273.32	<p><u>Universal Waste Notification and Reporting</u> –</p> <ol style="list-style-type: none"> (a) USEPA notification requirements. <ol style="list-style-type: none"> (1) Except as provided in subsections (a)(2) and (b) of this section, a universal waste handler shall have sent written notification of universal waste management to the Regional Administrator, and received a federal ID Number, before accumulating 5,000 kilograms of universal waste. (2) A universal waste handler who has already notified the USEPA of the universal waste handler's hazardous waste management activities and has received an EPA Identification Number is not required to renotify pursuant to this section. (b) A universal waste handler who accumulates 5,000 kilograms of universal waste, but who would not be required to notify the Regional Administrator pursuant to 40 Code of Federal Regulations section 273.32(a)(1) because the universal wastes handled are non-RCRA hazardous waste shall obtain an ID Number, as defined in section 66260.10, from the Department. (c) Department notification requirements for universal waste handlers of electronic devices, CRTs, and CRT glass.

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- (1) Any universal waste handler who might accept and accumulate, but not treat, any electronic device, CRT, and/or CRT glass from an offsite source shall submit to the Department at the address given in subsection (e) or (f) of this section, an electronic or written notification containing the information specified in subsection (c)(2) of this section no later than 30 calendar days prior to accepting any electronic device, CRT and/or CRT glass.
 - (2) This notification shall include:
 - (A) Name of universal waste handler (If the facility owner is different than the facility operator, also include the owner's name.);
 - (B) ID Number of the universal waste handler, if applicable;
 - (C) Telephone number of universal waste handler;
 - (D) Mailing address of universal waste handler, and physical address, including county, if different from the mailing address;
 - (E) Name of the contact person at the universal waste handler's site who should be contacted regarding universal waste management activities;
 - (F) Telephone number of the contact person;
 - (G) An e-mail address for the contact person or organization, if available;
 - (H) The types of electronic devices, CRTs, and/or CRT glass expected to be handled;
 - (I) The sources of the electronic devices, CRTs, and/or CRT glass (i.e., residential collections, business asset recovery, other collectors, etc.); and
 - (J) A statement indicating whether the universal waste handler might accumulate 5,000 kilograms or more of universal waste at one time.
 - (3) Notifications made pursuant to this subsection shall be made for each location at which the universal waste handler accepts or accumulates electronic devices, CRTs and/or CRT glass from an offsite source.
- (d) Annual reporting requirements for universal waste handlers of electronic devices, CRTs, and CRT glass.
- (1) A universal waste handler that accepts more than 100 kilograms (or 220 pounds) of electronic devices, CRTs, and CRT glass calculated collectively, from any offsite sources in a calendar year shall, by February 1 of the following year, submit to the Department at the address given in subsection (e) or (f) of this section, an electronic or written annual report containing the information specified in subsection (d)(3) of this section. The information submitted pursuant to this subsection (d)(1) shall cover the electronic-device- handling, CRT-handling, and CRT-glass-handling activities conducted during the previous calendar year.
 - (2) A universal waste handler that generates 5,000 kilograms (or 11,000 pounds; e.g., about 200 CRTs) or more of electronic devices, CRTs, and CRT glass calculated collectively, in a calendar year shall, by February 1 of the following year, submit to the Department at the address given in subsection (e) or (f) of this section, an electronic or written annual report containing the information specified in subsection (d)(3) of this section.
- (e) Electronic submissions. If submitted electronically through the Department's universal waste web-based reporting system, Department notifications and annual reports required pursuant to subsections (c) and (d) of this section shall be addressed to the Department at <http://www.dtsc.ca.gov>.
- (f) Written submissions. If submitted in writing, Department notifications and annual reports required pursuant to subsections (c) and (d) of this section shall be sent to the Department by certified mail, return receipt requested, at the following address: Department of Toxic Substances Control, Universal Waste Notification and Reporting Staff, P.O. Box 806, Sacramento, CA 95812-0806, with the words "Attention: Universal Waste Handling Activities" prominently displayed on the front of the envelope.

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136. CCR
66273.33(a)

Universal waste management requirements for batteries –

- (a) A handler shall manage batteries in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:

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- (1) A universal waste handler shall contain any battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container shall be closed, structurally sound, compatible with the battery and its contents, and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
- (2) A universal waste handler may conduct the following activities as long as the casing of each individual battery cell is not breached and remains intact and closed (except that cells may be opened to remove electrolyte but shall be immediately closed after removal):
 - (A) Sorting batteries by type;
 - (B) Mixing battery types in one container;
 - (C) Discharging batteries so as to remove the electric charge;
 - (D) Regenerating used batteries;
 - (E) Disassembling batteries or battery packs into individual batteries or cells;
 - (E) Disassembling batteries or battery packs into individual batteries or cells;
 - (F) Removing batteries from consumer products; or
 - (G) Removing electrolyte from batteries.
- (3) A universal waste handler who removes electrolyte from batteries, or who generates other waste (e.g., battery pack materials, discarded consumer products) as a result of the activities listed in subsection (a)(2) of this section, shall determine whether the electrolyte and/or other waste exhibit a characteristic of hazardous waste identified in article 3 of chapter 11.
 - (A) If the electrolyte and/or other waste exhibit a characteristic of hazardous waste, it shall be managed in compliance with all applicable requirements of this division. The universal waste handler is considered the generator of the hazardous electrolyte and/or other waste and is subject to chapter 12.
 - (B) If the electrolyte or other waste is not hazardous, the universal waste handler may manage the waste in any way that is in compliance with applicable federal, state or local solid waste regulations.

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137. CCR
66273.33(b)

Universal waste management requirements for lamps (including M003 wastes that contain lamps) –

- (b) A universal waste handler shall manage lamps in a way that prevents releases of any universal waste or component of a universal waste to the environment, as follows:
 - (1) A universal waste handler shall contain any lamp in a container or package that is structurally sound, adequate to prevent breakage, and compatible with the contents of the lamp. Such a container or package shall remain closed and shall lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.
 - (2) A universal waste handler shall immediately clean up and place in a container any lamp that is broken and shall place in a container any lamp that shows evidence of leakage or damage that could cause the release of mercury or other hazardous constituents to the environment. Containers shall be closed, structurally sound, compatible with the contents of the lamps and shall lack evidence of leakage, spillage, or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.

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138. CCR
66273.33(c)

Universal waste mercury-containing equipment -**(c) Mercury-containing equipment.**

- (1) **Accumulation.** A universal waste handler who accumulates any mercury-containing equipment received from another universal waste handler shall:
 - (A) Comply with all applicable requirements for handling hazardous materials;
 - (B) Disclose in all applicable business and use permitting applications that mercury is being handled;
 - (C) Comply with the location standards in section 66265.18;
 - (D) Comply with the seismic and precipitation design standards in section 66265.25;
 - (E) Accumulate mercury-containing equipment only in locations that are zoned for commercial or industrial uses, are consistent with local zoning requirements and land use patterns, and do not pose site-specific land-use hazards or contain sensitive habitat area, based on a review of state and local planning documents and constraints mapping.
- (2) **Prevention of releases to the environment.** A universal waste handler, who manages the types of mercury-containing equipment identified in subsections (c)(3) through (c)(5) of this section, shall comply with the requirements specified in those subsections.
- (3) **Mercury-containing rubber flooring.** A universal waste handler shall manage mercury-containing rubber flooring in a way that prevents releases of any universal waste or component of a universal waste to the environment under reasonably foreseeable conditions.
- (4) **Dental amalgams and/or pressure or vacuum gauges.** A universal waste handler shall manage dental amalgams and/or pressure or vacuum gauges in a way that prevents releases of any universal waste or component of a universal waste to the environment under reasonably foreseeable conditions, and shall:
 - (A) Comply with all of the following with respect to the dental amalgams:
 1. Place dental amalgams (e.g., dental-amalgam scraps and fines, single-use dental-amalgam traps and filters, and extracted teeth with dental-amalgam restorations) in airtight containers. The containers shall be kept closed, except when dental amalgams are being added or removed.
 2. Not rinse dental-amalgam traps or filters into a sink.
 3. Not place dental amalgams into medical waste containers.
 - (B) Comply with all of the following with respect to the pressure or vacuum gauges:
 1. Manage pressure or vacuum gauges as follows:
 - a. All openings through which mercury could escape shall be securely closed with appropriately sized stoppers or other closures that are compatible with the contents of the pressure or vacuum gauge.
 - b. Each pressure or vacuum gauge shall be sealed in a plastic bag. Plastic bags containing pressure or vacuum gauges shall be placed into a container or package that is structurally sound, adequate to prevent breakage, and compatible with the contents of the pressure or vacuum gauge. The container or package shall remain closed (except when pressure or vacuum gauges are added or removed), and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container shall contain packing materials adequate to prevent breakage during storage, handling, and transportation.
 - c. Pressure or vacuum gauges shall be kept upright at all times during handling, accumulation, and transportation.
 - d. A mercury clean-up system shall be readily available to transfer immediately any mercury resulting from spills or leaks from pressure or vacuum gauges to an airtight container that meets the requirements of subsection (c)(4)(B)1.b. of this section.
 2. Meet the requirements of subsection (c)(7) of this section, if removing liquid

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mercury from a pressure or vacuum gauge.

- (5) All **other mercury-containing equipment**. A universal waste handler of the mercury-containing equipment listed in subsections (c)(5)(A) through (c)(5)(F) of this section (i.e., thermostats, mercury switches, mercury-added novelties, gas flow regulators, mercury counterweights and dampers, and/or dilators and weighted tubing) shall manage such equipment in a way that prevents releases of any universal waste or component of a universal waste to the environment under reasonably foreseeable conditions, and shall comply with the additional requirements specified in those subsections.
- (A) **Thermostats**. A universal waste handler shall manage thermostats (and ampules removed from thermostats) in accordance with the requirements of subsection (c)(6)(A) of this section.
- (B) **Mercury switches and/or thermometers**. A universal waste handler shall manage mercury switches and/or thermometers in accordance with the requirements of subsection (c)(6)(C) of this section and with the following requirements, as applicable:
1.
 - a. Contain in a sealed plastic bag in a container, any mercury switch or thermometer that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container shall be closed (except when a mercury switch or thermometer is added or removed), structurally sound, and compatible with the contents of the mercury switches and/or thermometers, and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container shall contain packing materials adequate to prevent breakage of mercury switches and/or thermometers during storage, handling, and transportation.
 - b. Accumulate thermometers in closed, non-leaking containers that are in good condition and shall pack thermometers with packing materials adequate to prevent breakage during storage, handling, and transportation.
 2. Do the following, prior to crushing, baling, shearing, or shredding a motor vehicle equipped with one or more mercury switches that are also mercury-containing motor vehicle light switches:
 - a. Remove all such mercury switches (except those that cannot be removed due to accidental damage to the vehicle) or ensure that all such mercury switches (except those that cannot be removed due to accidental damage to the vehicle) have already been removed; and
 - b. Comply with subsection (c)(7) of this section, if removing a mercury-containing motor vehicle light switch.
- (C) **Mercury-added novelties**. A universal waste handler shall manage mercury-added novelties in accordance with the requirements of subsection (c)(6)(C) of this section and with the following requirements, as applicable:
1. Manage mercury-added novelties, whose only mercury is contained in a button cell or other battery, pursuant to the requirements for batteries specified in subsection (a) of this section.
 - a. A universal waste handler, who is also a conditionally exempt small quantity universal waste generator, may remove from such mercury-added novelties batteries containing mercury if they are removable.
 - b. Batteries removed from such mercury-added novelties may be managed pursuant to subsection (a) of this section.
 2. Accumulate in an airtight container, mercury-added novelties that are painted with paint containing mercury. The container shall be closed (except when mercury-added novelties are added or removed), structurally sound, and compatible with the mercury-added novelties, and shall lack evidence

- of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
3. Manage mercury-added novelties that contain liquid mercury, as follows:
 - a. Such mercury-added novelties shall be packed in an airtight container, with packing materials adequate to prevent breakage during storage, handling, and transportation. The container shall: be closed (except when mercury-added novelties are added or removed), structurally sound, and compatible with the mercury-added novelties, and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
 - b. Any such mercury-added novelty that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions shall be placed in an airtight container. The container shall meet the requirements of subsection (c)(5)(C)3.a. of this section.
 - c. A mercury clean-up system shall be readily available.
 4. Manage mercury-added novelties, whose only mercury is contained in mercury switches, pursuant to the requirements of subsection (c)(5)(B) of this section.
 - a. A universal waste handler may manage mercury switches removed from mercury-added novelties as mercury switches.
 - b. A universal waste handler shall comply with subsection (c)(7) of this section, if removing a mercury switch from a mercury-added novelty.
- (D) **Gas flow regulators.** A universal waste handler shall manage gas flow regulators in accordance with the requirements of subsection (c)(6)(C) of this section and with all of the following requirements:
1. Ensure that gas flow regulators are kept upright at all times during accumulation and transportation.
 2. Place each gas flow regulator into an airtight container or package that is structurally sound, adequate to prevent breakage, and compatible with the contents of the gas flow regulator. The container or package shall remain closed and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
 3. Ensure that a mercury clean-up system is readily available to transfer immediately any mercury resulting from spills or leaks from gas flow regulators, to an airtight container that meets the requirements of subsection (c)(5)(D)2. of this section.
- (E) **Mercury counterweights and dampers.** A universal waste handler shall manage mercury counterweights and dampers in accordance with the requirements of subsections (c)(6)(B) and (c)(6)(C) of this section and with all of the following requirements:
1. Prior to shipping mercury counterweights and dampers to a recycler, pack them in a container, with packing materials adequate to prevent breakage during storage, handling, and transportation. The container shall be closed (except when mercury counterweights and dampers are added or removed), structurally sound, and compatible with the contents of the mercury counterweight or damper; and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
 2. Ensure that a mercury clean-up system is readily available.
- (F) **Dilators and weighted tubing.** A universal waste handler shall manage dilators and weighted tubing in accordance with the requirements of subsections (c)(6)(B) and (c)(6)(C) of this section, and with all of the following requirements:
1. Prior to shipping dilators and weighted tubing, pack them in a container with packing materials adequate to prevent breakage during storage, handling, and transportation. The container shall be closed (except when dilators and weighted tubing are added or removed), structurally sound, and compatible

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with the contents of the dilators and weighted tubing, and shall lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

2. Ensure that a mercury clean-up system is readily available.

- (6) General requirements. A universal waste handler shall manage the mercury-containing equipment identified in subsection (c)(5) of this section in accordance with the following requirements, as specified in that subsection:
 - (A) Place in a container any mercury-containing equipment with uncontained elemental mercury or that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container shall: be closed (except when mercury-containing equipment is added or removed), structurally sound, and compatible with the contents of the mercury-containing equipment; lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
 - (B) Place into a sealed plastic bag in an airtight container, any mercury-containing equipment that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The container shall: be closed (except when mercury-containing equipment is added or removed), structurally sound, and compatible with the contents of the mercury-containing equipment; and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
 - (C) Characterize residuals as follows:
 - 1. Determine whether the following exhibit a characteristic of hazardous waste identified in article 3 of chapter 11 of this division:
 - a. Mercury or clean-up residues resulting from spills or leaks; and/or
 - b. Other wastes generated as a result of handling mercury-containing equipment.
 - 2. If the mercury, residues, and/or other wastes exhibit a characteristic of hazardous waste, the universal waste handler shall manage the wastes in compliance with all applicable requirements of this division. The universal waste handler is considered the generator of the mercury, residues, and/or other wastes and shall manage them pursuant to chapter 12 of this division.
 - 3. If the mercury, residues, and/or other wastes do not exhibit a characteristic of hazardous waste, the universal waste handler may manage the wastes in any way that complies with all applicable federal, state and local solid waste regulations.
- (7) Treatment. A universal waste handler, who treats any mercury-containing equipment (e.g., removes ampoules and mercury switches, drains pressure or vacuum gauges), shall comply with the applicable requirements of article 7 of this chapter in addition to the requirements of subsection (c) of this section with respect to the mercury-containing equipment.

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139. CCR Universal waste management requirements for electronic devices –

- 66273.33.5(a) (1) A universal waste handler of electronic devices shall:
 - (A) Comply with the applicable requirements of sections 66273.30 through 66273.32 (See Items 133-134), and of sections 66273.34 through 66273.39 (See Items 141-146), of this article with respect to the management of those electronic devices; and
 - (B) Manage electronic devices in a way that prevents releases of any universal waste or component of a universal waste to the environment under reasonably foreseeable conditions, as follows:
 - 1.
 - a. A universal waste handler shall contain any electronic device in a manner that prevents breakage and release of components to the environment. If a container is used, such a container shall prevent leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.
 - b. Intact electronic devices that are managed in a manner that prevents

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breakage of the electronic devices and release of components of the electronic devices to the environment under reasonably foreseeable conditions (e.g., stretch-film on a pallet) shall be deemed to comply with subsection (a)(1)(B)1.a. of this section.

2. A universal waste handler shall immediately clean up and place in a container any electronic device that is accidentally or unintentionally broken and may be expected to cause a release of hazardous constituents to the environment under reasonably foreseeable conditions. The container shall be structurally sound, compatible with the contents of the electronic devices and shall prevent releases of components to the environment under reasonably foreseeable conditions.

(2) Except as otherwise provided in subsection (a)(3) of this section, a universal waste handler of electronic devices shall comply with the applicable requirements of article 7 of this chapter in addition to the requirements of subsection (a)(1) of this section with respect to the electronic devices.

(3) A universal waste handler of electronic devices shall be exempt from the requirements of article 7 of this chapter with respect to the electronic devices, if the universal waste handler:

(A) Manages only electronic devices that are intact (except for the occasional electronic device that is accidentally or unintentionally broken and that is managed according to the applicable provisions of this chapter);

(B) Ensures that the intact electronic devices remain intact (except for the occasional electronic device that is accidentally or unintentionally broken and that is managed according to the applicable provisions of this chapter) throughout the entire time they are in the universal waste handler's custody; and

(C) Complies with the requirements of section (a)(1) of this section.

140. CCR
66273.33.5(b)

Universal waste management requirements for CRTs –

(1) A universal waste handler of CRTs shall:

(A) Comply with the applicable requirements of sections 66273.30 through 66273.32 (See Items 133-134), and of sections 66273.34 through 66273.39 (See Items 141-146), of this article with respect to the management of those CRTs; and

(B) Manage CRTs in a manner that prevents releases of any CRTs or component of any CRTs to the environment under reasonably foreseeable conditions, as follows:

1. A universal waste handler shall contain any CRT in a container or package that is structurally sound, adequate to prevent breakage of the CRT, and compatible with the contents of the CRT. Such a container or package shall lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.

2. A universal waste handler shall immediately clean up and place in a container any CRT that is broken and shall place in a container any CRT that shows evidence of breakage, leakage, or damage that could cause the release of CRT glass or other hazardous constituents to the environment under reasonably foreseeable conditions. The containers shall be structurally sound, compatible with the contents of the CRTs and shall lack evidence of leakage, spillage or damage that could cause leakage or releases of CRT glass or other hazardous constituents to the environment under reasonably foreseeable conditions.

3. A universal waste handler shall place CRTs in a container with packing materials, if such material is necessary to prevent breakage during handling, storage and transportation.

(2) A universal waste handler of CRTs shall comply with the applicable requirements of article 7 of this chapter in addition to the requirements of subsection (b)(1) of this section with respect to the CRTs.

141. CCR

Universal waste management requirements for CRT glass –

<u>ITEM</u>	<u>CODE</u>	<u>DESCRIPTION</u>
66273.33.5(c)	(1)	<p>A universal waste handler of CRT glass shall:</p> <p>(A) Comply with the applicable requirements of sections 66273.30 through 66273.32, and of sections 66273.34 through 66273.39, of this article with respect to the management of the CRT glass; and</p> <p>(B) Manage CRT glass in a way that prevents releases of any CRT glass to the environment under reasonably foreseeable conditions, as follows:</p> <ol style="list-style-type: none"> 1. A universal waste handler shall contain any CRT glass in a container or package that is structurally sound and compatible with the contents of the CRT glass to prevent releases to the environment. Such a container or package shall lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions. 2. A universal waste handler shall immediately clean up and place in a container any CRT glass that is released from a broken CRT or that is spilled. A universal waste handler shall immediately clean up and place in another container any CRT glass that is released as a result of breakage, leakage, or damage to a container of CRT glass, and shall place in that other container any unreleased CRT glass remaining in the broken, leaking, or damaged container. The containers into which CRT glass is placed shall be structurally sound, compatible with the contents of the CRT glass, and shall lack evidence of leakage, spillage or damage that could cause leakage or releases of CRT glass or other hazardous constituents to the environment under reasonably foreseeable conditions. <p>(2) A universal waste handler of CRT glass shall comply with the applicable requirements of article 7 of this chapter in addition to the requirements of subsection (c)(1) of this section with respect to the CRT glass.</p>

142. CCR 66273.34 Universal waste labeling - Except as otherwise provided in subsection (g) of this section, a universal waste handler shall label or mark universal waste to identify the type of universal waste as specified in subsections (a) through (f) of this section.

- (a) Batteries (i.e., each battery), or a container in which the batteries are contained, shall be labeled or marked clearly with the following phrase: "Universal Waste-Battery(ies)".
- (b) Mercury-containing equipment (i.e., each individual mercury-containing equipment), or a container in which the mercury-containing equipment is contained, shall be labeled or marked clearly with the following phrase: "Universal Waste -Mercury-Containing Equipment".
- (c) Lamps (including M003 wastes that contain lamps) (i.e., each lamp), or a container or package in which the lamps are contained, shall be labeled or marked clearly with the following phrase: "Universal Waste-Lamp(s)".
- (d) Electronic devices (i.e., each electronic device), or a container or pallet in or on which the electronic devices are contained, shall be labeled or marked clearly with the following phrase: "Universal Waste-Electronic Device(s)".
- (e) CRTs (i.e., each CRT), or a container or pallet in or on which the CRTs are contained, shall be labeled or marked clearly with the following phrase: "Universal Waste-CRT(s)".
- (f) A container of CRT glass shall be labeled or marked clearly with the following phrase: "Universal Waste-CRT glass".
- (g) In lieu of labeling individual electronic devices, CRTs, and/or containers of CRT glass pursuant to subsections (d) through (f) of this section, a universal waste handler may combine, package, and accumulate those universal wastes in appropriate containers or within a designated area demarcated by boundaries that are clearly labeled with the applicable portion(s) of the following phrase: "Universal Waste-Electronic Device(s)/Universal Waste - CRT(s)/Universal Waste-CRT Glass".

143. CCR 66273.35 Universal waste accumulation time limits –

ITEM CODE**DESCRIPTION**

- (a) A universal waste handler shall accumulate universal waste for no longer than one year from the date the universal waste was generated, or was received from another universal waste handler.
- (b) A universal waste handler shall be able to demonstrate the length of time that the universal waste has been accumulated from the date it became a waste or was received. The universal waste handler may make this demonstration by:
 - (1) Placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received;
 - (2) Marking or labeling the individual item of universal waste (e.g., each battery or thermostat) with the date it became a waste or was received;
 - (3) Maintaining an inventory system onsite that identifies the date the universal waste being accumulated became a waste or was received;
 - (4) Maintaining an inventory system onsite that identifies the earliest date that any universal waste in a group of items of universal waste or a group of containers of universal waste became a waste or was received;
 - (5) Placing the universal waste in a specific accumulation area and marking or labeling the area to identify the earliest date that any universal waste in the area became a waste or was received; or
 - (6) Any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date it became a waste or was received.

144. CCR 66273.36 Universal waste personnel training –

- (a) A universal waste handler shall ensure that all personnel who manage universal wastes at the universal waste handler's facility are thoroughly familiar with proper universal waste management and emergency response procedures relative to those persons' responsibilities, as specified in subsections (b) and (c) of this section.
 - (1) For purposes of this section, "personnel who manage universal waste" means any persons who consolidate, sort, treat, recycle, package for transport, offer for transport, or physically relocate containers of universal waste.
 - (2) Persons who, in the course of their normal duties, only generate universal wastes from onsite sources and place them into accumulation containers, areas or locations are not "personnel who manage universal waste" (e.g., an office worker who removes spent batteries from an electronic device).
- (b) A universal waste handler shall initially train and provide annually, thereafter, training to all personnel who manage or who supervise those who manage universal wastes. Training materials shall be in the form of any written media (e.g., brochures, electronic mail, company letters, pamphlets, posters, etc.) and shall include the date of that material. This training shall include, at a minimum:
 - (1) The types and hazards associated with the universal waste that personnel may manage at the facility (e.g., hazards due to leaded glass in CRT devices or CRTs);
 - (2) The proper disposition of universal wastes managed at the facility (e.g., the locations of universal waste containers, or the location of a centralized universal waste accumulation area);
 - (3) The proper procedures for responding to releases of universal wastes (e.g., spilled CRT glass) including the position titles and the means of contacting those personnel at the facility who are designated to respond to reports of releases (e.g., spilled CRT glass) and/or to respond to questions received from other personnel at the facility; and
 - (4) The applicable requirements contained in this chapter regarding labeling, collecting, handling, consolidating, and shipping universal wastes at the facility, including, but not limited to, the prohibition on the disposal of universal wastes, and for personnel involved in shipping universal wastes who are "hazmat employees", as defined in 49 Code of Federal Regulations section 171.8, the applicable requirements prescribed in 49 Code of Federal Regulations section 172.704.
- (c) The universal waste handler shall maintain a written record by date (e.g., a list of

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personnel who have received either initial or annual training information) indicating the names of personnel who received the information specified in subsection (b) of this section.

- (d) The universal waste handler shall maintain the record specified in subsection (c) of this section for at least three years from the date the person last managed any universal waste at the facility. The record of training for a "hazmat employee", as defined in 49 Code of Federal Regulations section 171.8, shall meet the applicable requirements of 49 Code of Federal Regulations section 172.704(d). The training record may accompany a person who is transferred within the same company.

145. CCR 66273.37 Universal waste response to releases –

- (a) A universal waste handler shall immediately contain all releases of universal wastes and of residues from universal wastes to the environment.
- (b) A universal waste handler shall determine whether any material resulting from such a release is a hazardous waste, and if so, shall manage the hazardous waste in compliance with all applicable requirements of this division. The universal waste handler is considered the generator of the hazardous waste resulting from the release, and is subject to the requirements of chapter 12.
- (c) Hazardous waste consisting only of residues of leaking, broken, or otherwise damaged universal waste may be managed as universal waste provided that the leaking, broken, or otherwise damaged universal waste is repackaged according to the standards of section 66273.33 or 66273.33.5 (See Items 135-140).

146. CCR 66273.38 Universal waste offsite shipments –

- (a) A universal waste handler is prohibited from sending or taking universal waste to a place other than another universal waste handler, a destination facility, or a foreign destination.
- (b) If a universal waste handler self-transport universal waste offsite, the universal waste handler becomes a universal waste transporter for those self-transportation activities and shall comply with the transporter requirements of article 5 of this chapter while transporting the universal waste.
- (c) If a universal waste being offered for offsite transportation meets the definition of hazardous material pursuant to 49 CFR parts 171 through 180, a universal waste handler shall package, label, mark and placard the shipment, and prepare the proper shipping papers in accordance with the applicable Department of Transportation regulations pursuant to 49 CFR parts 172 through 180;
- (d) Prior to sending a shipment of universal waste to another universal waste handler or to a destination facility, the originating universal waste handler shall ensure that the receiving universal waste handler or destination facility agrees (e.g., verbal or written communication) to receive the shipment.

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147. CCR 66273.39 Universal waste tracking shipments –

- (a) Receipt of shipments. A universal waste handler shall keep a record of each shipment of universal waste received at the universal waste handler's facility. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The record for each shipment of universal waste received shall include the following information:
- (1) The name and address of the originating universal waste handler from which the universal waste was sent;
 - (2) The quantity [count or weight, consistent with, for example, section 66273.32, subsection (d) (See Item 134)] of each type of universal waste received (e.g., batteries, thermostats, lamps, electronic devices, CRTs, CRT glass); and
 - (3) The date of receipt of the shipment of universal waste.
- (b) For purposes of compliance with subsection (a) of this section, a universal waste handler who receives universal wastes from household generators and conditionally exempt small quantity universal waste generators, as defined in section 66273.9, may
- (1) in lieu of the originating universal waste handler's name and address, record "household generator" and/or "CESQUWG", and
 - (2) record the total quantity of each type of universal waste as an aggregate from households and/or conditionally exempt small quantity universal waste generators,

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as defined in section 66273.9.

- (c) Shipments offsite. A universal waste handler shall keep a record of each shipment of universal waste sent from the universal waste handler's facility to another facility. The record may take the form of a log, invoice, manifest, bill of lading or other shipping document. The record for each shipment of universal waste sent shall include the following information:
- (1) The name and address of the universal waste handler or destination facility to which the universal waste was sent;
 - (2) The quantity [count or weight, consistent with, for example, section 66273.32, subsection (d) (See Item 134)] of each type of universal waste sent (e.g., batteries, thermostats, lamps, electronic devices, CRTs, CRT glass);
 - (3) The date of departure of the shipment of universal waste.
- (d) Record retention.
- (1) A universal waste handler shall retain each record described in subsection (a) of this section for at least three years from the date of receipt of the corresponding shipment of universal waste.
 - (2) A universal waste handler shall retain each record described in subsection (c) of this section for at least three years from the date of departure of the corresponding shipment of universal waste.

148. Reserved

149. Reserved

150. CCR 2729(a) **Required content of a hazardous materials business plan (HMBP)** – An HMBP includes the following:

- (1) Hazardous materials inventory;
- (2) Emergency response plans and procedures; and
- (3) Training program information.

[NOTE: See Items 152, 158, and 159 for details]

151. HSC 25509(a) **Hazardous materials inventory requirements** - The inventory shall include, but not be limited to, information on every hazardous substance or chemical product handled by the business in amounts that are reportable (See Item 50 & 153):

- A listing of the chemical name and common names of every hazardous substance or chemical product handled by the business;
- The category of waste, including the general chemical and mineral composition of the waste listed by probable maximum and minimum concentrations, or every hazardous waste handled by the business;
- A listing of the chemical name and common names of every other hazardous material or mixture containing a hazardous material handled by the business which is not otherwise listed;
- The maximum amount of each hazardous material or mixture containing a hazardous material which is handled at any one time by the business over the course of the year;
- Sufficient information on how and where the hazardous materials are handled by the business to allow fire, safety, health, and other appropriate personnel to prepare adequate emergency responses to potential releases;
- The SIC Code number of the business if applicable;
- The name and phone number of the person representing the business and able to assist emergency personnel in the event of an emergency involving the business during nonbusiness hours.

152. CCR 2729.1(a) **Business Plan general requirements** – A business that handles a hazardous material or a mixture containing a hazardous material shall establish and implement a business plan if the hazardous material is handled in quantities:

- equal to or greater than 500 pounds, 55 gallons, or 200 cubic feet of gas (gas calculated at standard temperature and pressure), or

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		<ul style="list-style-type: none"> • equal to or greater than the applicable federal threshold planning quantity (TPQ) for an extremely hazardous substance (EHS) listed in Appendix A, Part 355, Title 40, of the Code of Federal Regulations. <ul style="list-style-type: none"> ○ <i>[NOTE: If a facility handles a hazardous material pursuant to this portion, they are subject to the Federal Emergency Planning and Community Right-to-Know Act (EPCRA) – See Item 157].</i> • radioactive materials that are handled in quantities for which an emergency plan is required to be adopted pursuant to Part 30 (commencing with Section 30.1), Part 40 (commencing with Section 40.1), or Part 70 (commencing with Section 70.1), of Chapter 10 of Title 10 of the Code of Federal Regulations (54 Federal Register 14051), or pursuant to any regulations adopted by the state in accordance with those regulations.
153.	CCR 2729.2(a)	<p>Hazardous materials reporting requirements - A business subject to the requirements of Section 2729.1 shall complete and submit to the Certified Unified Program Agency (CUPA) or Administering Agency (AA) the following to satisfy the inventory reporting requirement:</p> <ul style="list-style-type: none"> ▪ The Business Activities page of the Unified Program Consolidated Form as required by California Code of Regulations (CCR) Title 27, Section 15600(a); and Business Owner/Operator Identification page; and ▪ The Hazardous Materials-Chemical Description Page; and ▪ An Annotated Site Map.
154.	CCR 2729.4	<p>Hazardous material inventory submittal - for the submittal of the inventory and inventory reporting submittal deadline</p> <ul style="list-style-type: none"> ▪ A business shall submit a hazardous materials inventory to the appropriate CUPA or AA and local fire agency. ▪ The hazardous materials inventory shall be submitted annually on or before March 1.
155.	CCR 2729.4(d)	<p>Hazardous material inventory amendments - for inventory amendments [same as HSC 25510] Businesses shall submit an amendment to the inventory within 30 days of the following events:</p> <ul style="list-style-type: none"> ▪ A 100 percent or more increase in the quantity of a previously disclosed material. ▪ Any handling of a previously undisclosed hazardous material subject to the inventory requirements of this chapter. ▪ Change of business address. ▪ Change of business ownership. ▪ Change of business name.
156.	CCR 2729.6(a)	<p>Emergency Planning & Community Right to Know Act Compliance Requirement (EPCRA) – Submittal of a hazardous materials inventory shall meet EPCRA if the following additional requirements are met:</p> <ul style="list-style-type: none"> ▪ Business Activities page of the Unified Program Consolidated Form ▪ “Substantiation to Accompany Claims of Trade Secrecy” form for businesses that wish to claim trade secrets. ▪ If the hazardous materials being reported is an Extremely Hazardous Substance (EHS) the Chemical Description page must contain an original signature, photocopy of the original signature, or a signature stamp. The signature may be placed in the box for locally collected information.
157.	CCR 2731	<p>Emergency response plans and procedures - The business plan shall include the following emergency response procedures for a release or threatened release of hazardous materials, scaled appropriately for the size and nature of the business, the nature of the damage potential of the hazardous materials handled, and the proximity of the business to residential areas and other populations:</p> <ul style="list-style-type: none"> ▪ immediate notification of: <ul style="list-style-type: none"> ○ local emergency response personnel;

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- the administering agency and the State Office of Emergency Services pursuant to article 2 of this subchapter;
- persons within the facility who are necessary to respond to an incident;
- identification of local emergency medical assistance appropriate for potential accident scenarios;
- mitigation, prevention, or abatement of hazards to persons, property, or the environment;
- immediate notification and evacuation of the facility; and
- identification of areas of the facility and mechanical or other systems that require immediate inspection or isolation because of their vulnerability to earthquake related ground motion.

158. CCR 2732

Business plan training requirements -

The business plan shall include a training program which is reasonable and appropriate for the size of the business and the nature of the hazardous materials handled. The training program shall take into consideration the responsibilities of the employees to be trained. The training program shall, at a minimum, include:

- methods for safe handling of hazardous materials;
- procedures for coordination with local emergency response organizations;
- use of emergency response equipment and supplies under the control of the handler, and
- all procedures required by Section 2731 of this Article. (See Item 157)

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The business plan shall include provisions for ensuring that appropriate personnel receive initial and refresher training.

159. HSC 25507

Hazardous materials handler spill reporting - The handler or any employee, authorized representative, agent, or designee of a handler shall, upon discovery, immediately report any release or threatened release of a hazardous material to the administering agency, and to the agency, in accordance with the regulations adopted pursuant to Section 25503. Each handler and any employee, authorized representative, agent, or designee of a handler shall provide all state, city, or county fire or public health or safety personnel and emergency rescue personnel with access to the handler's facilities.

[NOTE: This does not apply to any person engaged in the transportation of a hazardous material on a highway which is subject to, and in compliance with, the requirements of Sections 2453 and 23112.5 of the Vehicle Code.]

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**14. Empty Container Management - California
Department of Toxic Substances**



Fact Sheet, February, 2009

Managing Empty Containers

Regulatory Assistance Officer's Introduction

The Department of Toxic Substances Control (DTSC) has prepared this fact sheet to provide an overview of general information about the management of empty containers. Throughout this fact sheet, citations from the California Code of Regulations and the California Health and Safety Code are linked to databases containing those citations. If you generate hazardous waste, you should consult with your Certified Unified Program Agency (CUPA). Finally, DTSC strongly encourages all businesses generating hazardous waste to consider waste minimization, source reduction and pollution prevention.

Background:

Properties throughout California have been contaminated because containers holding residual hazardous materials at the sites were not managed properly. Ironically, operators at many of these sites were recycling and reconditioning drums and containers, activities that we would like to encourage. Since much of the contamination at drum reconditioning sites resulted from mismanaging hazardous material residues that were removed from “empty” containers, DTSC developed regulations that set forth a definition of “empty container.” These regulations establish management practices, which, if met, exempt “empty” containers from further regulation under the hazardous waste regulations. Only containers that once held hazardous materials or hazardous wastes are subject to these regulations. The regulations are found in Title 22, California Code of Regulations, section [66261.7](#).





Our mission is to provide the highest level of safety, and to protect public health and the environment from toxic harm.

Definition of a Container:

A container is any portable device in which material can be stored, handled, treated, transported, recycled, or disposed of. The definition of container is found in California Code of Regulations, Title 22, section [66260.10](#). Containers range in size from small lab bottles to trucks and rail cars, but the most common containers used for hazardous waste and hazardous materials management are 55 gallon steel or plastic drums and inner liners from these drums. The empty container management requirements discussed in this fact sheet pertain to containers and their liners that are 119 gallons or less in volume. Those who manage containers with a capacity of greater than 119 gallons (“bulk containers”) must follow the requirements given in California Code of Regulations, title 22, section [66261.7\(p\)](#).

Definition of an “Empty” Container:

The strategy adopted by DTSC to define an “empty” container or container liner was to establish standards that require the generator (the person who uses the contents of the container) to empty the container of material as much as is reasonably possible. This standard is more stringent than the federal empty standard (found in Title 40 Code of Federal Regulations, section 261.7), which allows up to one inch or 3% of the total weight of the container’s contents to remain in the container. The California regulation sets three standards to define an empty container, each based on the type of material held by the container:

Containers That Held Pourable Materials:

For containers that held a material that can be readily poured, all material must be removed by any practicable means (including draining, pouring, pumping or aspirating) before the container can be considered empty. In regards to draining, a container is empty when there is no longer a continuous stream of material coming from the opening when the container is held in any orientation (see the first question in the list of commonly asked questions at the end of this document).

Containers Holding Non-Pourable Materials:

For containers that previously held materials that are non-pourable, no hazardous material shall remain in the container that can feasibly be removed by physical methods, including scraping and chipping, but not rinsing. This standard applies to materials that pour slowly or don’t pour at all from the container, including, but not limited to, viscous materials, solids which have “caked up” inside the container, and non-pourable sludges.

Containers Holding Acute or Extremely Hazardous Waste:

Containers which previously held acute or extremely hazardous waste are considered empty only if the container has been triple-rinsed using a solvent capable of removing the material, or cleaning by another method which is proven to achieve equivalent removal to triple-rinsing. These activities may require formal authorization (permitting) by DTSC or the CUPA. This standard is similar to the federal standard.





Our mission is to provide the highest level of safety, and to protect public health and the environment from toxic harm.

MANAGEMENT PRACTICES

In order to retain the exemption from regulation, “empty” containers must be managed according to the following management practices:

- By reclaiming the container’s scrap value onsite;
- By sending the container to a person who reclaims the container’s scrap value;
- By reconditioning or remanufacturing the container onsite; or
- By shipping the container to a person who reconditions or remanufactures the container.

Note that it is not mandatory for generators to manage empty containers under the provisions of this section. The section allows the generator to use management standards that are less stringent than hazardous waste standards. A generator may instead decide to recycle containers onsite per the subsequent onsite accumulation of waste oil or other compatible waste or product.

Containers Being Sent Back to the Manufacturer for Refilling:

Containers that are sent back to the supplier for the purpose of being refilled are exempt from DTSC regulations if all of the following requirements are met:

- The container was last used to hold a hazardous material acquired from a supplier of hazardous materials;
- The container is empty per the federal standards in Section 261.7 of Title 40 of the Code of Federal Regulations;
- The container is returned to a supplier of hazardous materials for the purpose of being refilled, as long as the supplier's reuse of the container is in compliance with the Department of Transportation (DOT) requirements for shipping containers found in Section 173.28, Title 49, Code of Federal Regulations;
- The container is not treated prior to being returned to the supplier of hazardous materials, except as authorized by section 66261.7.
- The container is not treated (except as authorized section 66261.7) by the supplier of hazardous materials without obtaining specific authorization from the Department; and
- The container is refilled by the supplier with hazardous material which is compatible with the hazardous material which the container previously held unless the container has been adequately decontaminated.

Containers of Five Gallons or Less In Capacity:

“Empty” containers of five gallons or less in capacity can be managed by one of the following methods:

- By reclaiming the container’s scrap value onsite;
- By sending the container to a person who reclaims the container’s scrap value;





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- By reconditioning or remanufacturing the container onsite; or
- By shipping the container to a person who reconditions or remanufactures the container.
- By disposing of the container at an appropriate solid waste facility;

An “appropriate solid waste facility” is one that can accept the empty, unrinsed containers. Some solid waste facilities and municipal waste haulers will not accept empty, unrinsed hazardous materials containers, so generators should check with their local solid waste management agencies before disposing of these containers as solid wastes.

Special Provisions for Specific Containers

Household Containers

Emptied household hazardous material and pesticide containers with a capacity of five gallons or less are exempt from regulation if the container was emptied by removing all of the contents that can be removed using practices commonly employed to remove materials from that type of container.

Compressed Gas Cylinders

Compressed gas cylinders are exempt from regulation when the pressure in the cylinder approaches atmospheric pressure.

Aerosol Containers

Aerosol containers are exempt from regulation when the container is emptied to the maximum extent practical under normal use provide that:

- The empty can is not regulated by the federal law under the Resource Conservation and Recovery Act (RCRA); and
- The aerosol container did not previously hold an acute or extremely hazardous waste.

Aerosol containers with hazardous material remaining in the container, including those due to a clogged nozzle, damaged valve, or loss of propellant, are not exempt from regulation and must be managed as hazardous wastes or managed as universal wastes pursuant to California Health and Safety Code section [25201.16](#).

Containers Made of Absorptive Materials:

Containers made of absorptive materials such as wood, cardboard, cloth or paper cannot be exempt from regulation if the container was in direct contact with and has absorbed the hazardous material.





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Pesticide Containers from Commercial Farms

Pesticide containers or the inner liners from pesticide containers that have been generated by commercial farming operation do not have to be regulated as hazardous waste if they are managed according to California Code of Regulations, title 22, section [66262.70](#). The containers must be emptied by removing all of the contents that can be removed by draining, pouring, pumping, or aspirating. The containers then must be triple-rinsed with a liquid capable of dissolving the pesticide that the containers held. The rinsate must be managed properly, such as placing it back into the pesticide sprayer for application. After triple-rinsing, the containers must be punctured, shredded, crushed, or otherwise changed so as to prevent subsequent use or reuse. They then can be disposed of, recycled by reclaiming their scrap value or reused in accordance with the provisions of Health and Safety Code section [25143.2\(d\)\(6\)](#).

Bulk Containers

Bulk containers are those with a capacity of greater than 119 gallons, including tanker trucks, roll-off bins and railroad cars (see the definition in California Code of Regulations, title 22, section [66260.10](#)). They are included in the contaminated-container regulations, but the requirements are different from smaller containers because they are not normally discarded. If you manage bulk containers, be sure to carefully read the regulations relating to them found in the California Code of Regulations, title 22, section [66261.7\(p\)](#).

Items Not Considered Containers by this Regulation:

Some containers are regulated by other sections of the federal regulations, the California Code of Regulations or the California Health and Safety Code, so the standards outlined in the contaminated container regulations cannot be used to exempt them from regulation. The contaminated container regulations do not apply to the following items:

- Used oil filters are managed per California Code of Regulations, title 22, section [66266.130](#)
- PCB (polychlorinated biphenyl)-contaminated electrical equipment (transformers, circuit-breakers, etc.) managed under:
- 40 Code of Federal Regulations section [761.60](#): Federal Toxic Substance Control Act requirements for PCBs,
- California Code of Regulations, title 22 sections [66261.24\(a\)\(2\)](#): Soluble Threshold Limit Concentration and Total Threshold Limit Concentration values, [66268.29\(b\)](#)
- California PCB Land Disposal Requirements, and [67426.1](#) through [67429.1](#) (management of PCB light ballasts).
- Chemotherapy drug intravenous bags and delivery tubing are managed as medical waste per Chapter 6.1 of division 20 of the Health and Safety Code. The California Department of Health Services [Medical Waste Management Program](#) regulates medical waste.





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COMMONLY ASKED QUESTIONS

Definition of "Empty"

Q. Regarding the definition of "empty," no matter how long the container is allowed to drain, some material might still drip when the container is inverted. How would an inspector verify that the container is truly empty?

A. As some residual material will always remain in the "empty" container, an inspector inverting the "empty" container may see some drops drip from the containers. This should not be considered a violation; however, a continuous stream of liquid from the container could be considered a violation. Therefore, generators should allow sufficient time for the container to drain in order to satisfy the "empty" standard.

Q. If I manage to "empty" the container pursuant to California code of Regulations, title 22, section [66261.7](#), can I assume that the container is non-hazardous at that stage?

A. No. The contaminated container regulations do not classify the containers as non-hazardous at any stage; they only grant an exemption if both the "empty" standard and the management practices are met. The intent of the regulations were to ease the regulatory burden on those generators that are interested in recycling the containers, as well as those involved in the transporting, recycling, refurbishing, and metal recovering contaminated containers. Mismanaged containers lose their exemptions and are subject to full regulation under the hazardous waste control laws.

Management Practices

Q. If the container is considered empty, then why should generators bother with the management practices?

A. "Empty" containers can still contain some residual hazardous materials that could cause significant harm if mismanaged. Therefore, the management practices outlined in California Code of Regulations, title 22, section [66261.7](#) are necessary to protect public health and the environment.

Q. Do I need to fill out a manifest and use a registered hauler to transport my "empty" containers?

A. Not if they meet all requirements for exemption. You are not required to fill out a hazardous waste manifest or use a registered hauler to transport the exempt containers. However, all empty containers must be transported in accordance applicable US DOT regulations, which include certain packaging and labeling requirements.

Q. My local program has authorized me to rinse containers under the tiered permitting program. Must I continue to manage my containers under these regulations after they have been decontaminated?

A. If you decontaminate your containers so that they do not exhibit hazardous characteristics and no longer present a hazard to human health and the environment, then they are no longer subject to the contaminated container regulations.





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Aerosol Containers:

Q. If I have an aerosol container with a clogged nozzle and I know that when I shake the container there is some liquid inside, is this can exempt from regulation?

A. No. Aerosol containers that are not or cannot be emptied of contents and propellant will not qualify for the exemption and should be managed as either hazardous or universal waste.

Q. If an aerosol can is empty to the maximum extent practical under normal use (i.e., I push the nozzle and nothing comes out and invert the container and I don't feel any liquid flow), is this container exempt from regulation? Can I puncture the container and send it for recycling?

A. Yes, but with an important caveat. Empty aerosol containers that did not previously hold acute or extremely hazardous waste are exempt from regulation and can be managed as non-hazardous waste. Puncturing or crushing exempt cans is not treatment of hazardous waste. However, since modern aerosol products often utilize flammable or explosive propellants, puncturing activities should be conducted only with proper aerosol-puncturing equipment that meets air-quality, OSHA, and other mandates.

Permit Requirements

Do I need a formal grant of authorization (permit) from DTSC to conduct the following activities:

Q: Remove non-pourable materials from containers to meet the "empty" definition?

A: No. The DTSC authorized the use of physical methods (excluding rinsing) to remove non-pourable materials from containers. See California Code of Regulations, title 22 section [66261.7\(b\)\(2\)](#). This authorization is not applicable to containers that previously held acute or extremely hazardous waste.

Q: Treat a container which previously held acute or extremely hazardous waste?

A: Triple-rinsing, or any other scientifically proven method to remove the acutely or extremely hazardous material, requires formal authorization from DTSC or the CUPA. The only exceptions are:

When the activity qualifies for exemption as specified in the recycling provisions of Health and Safety Code Section [25143.2\(c\)\(2\)](#)

The rinsing is conducted under the laboratory "benchtop treatment" exemption in California Health and Safety Code section [25200.3.1](#), or

The "treatment" is part of the manufacture's instruction for using the material. For example, some manufacturers instruct the user of a material to place a small amount of a neutralizing agent into a container after it has been emptied, in order to prevent reactive compounds from forming from the chemical residues.





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Q. Treat (rinse or shred) contaminated containers that did not previously contain acute or extremely hazardous waste?

A: The regulations allow treatment of containers without a permit, provided that container is “empty” as defined by the California regulations that it did not previously contain acute or extremely hazardous waste, and that it is managed pursuant to the management practices outlined in California Code of Regulations, title 22, section [66261.7](#).

Containers of 119 gallons or less in capacity that are empty pursuant to the federal standard (40 CFR 261.7), but not empty to the California standards may be treated under the authorization of the Conditional Exemption tier for Specified Wastestreams (CESW). Generators operating under CESW must comply with all the requirements set forth in California Health and Safety Code section 25201.5. For further information on the tiered permitting requirements, contact your local Certified Unified Program Agency (CUPA).

GENERAL QUESTIONS

Q. Do the contaminated containers regulations apply to underground storage tanks?

A. No. Underground storage tanks are not portable devices and thus are not considered containers (refer to the definition of a container on page 1). Therefore, the contaminated container regulations do not apply to underground storage tanks. Decontamination of underground tanks is covered in California Code of Regulations, title 22, chapter 32, beginning with section [67383.1](#).

Q. If the container had an inner liner that prevented contact of the material with the inner surface of the container, is the container still regulated as hazardous waste once I remove the inner liner?

A. No. Once the liner is removed, the container is exempt from regulation. This applies to containers of all sizes. It also applies to containers that previously held acute or extremely hazardous waste and containers that are made of absorptive materials. This exemption will not apply if the inner liner leaked and thus resulted in contaminated the outer container.

Q. Can I "reclaim" contaminated containers by making them into barbeques or other items? Isn't that "reclaiming scrap value"?

A. The contaminated container regulations do not address the reuse of containers in this way. The term "reclaiming scrap value" in the regulations is considered to be the sale of containers to a scrap metal facility. If a person wanted to use contaminated containers as a “raw material” to produce another product, the generator or handler would have to manage it as hazardous waste and decontaminate it. Decontamination of hazardous waste is considered to be treatment subject to permitting requirements, in this case, under tiered permitting. The person conducting treatment would have to be able to demonstrate that the containers were completely decontaminated before managing them as non-hazardous containers. The commercial use of containers to produce food appliances may also come under regulation by the Department of Food, Drug and Agriculture and other State and federal public health agencies.





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Q. Does laboratory glassware fit the definition of “empty containers”?

A. Yes. Contaminated laboratory glassware can be discarded or recycled if empty, or washed and reused. If it had contained extremely hazardous or acutely hazardous waste, the generator would need to triple rinse it before discarding it.

DTSC REGULATORY ASSISTANCE OFFICERS

If you cannot find the answer to your question in this fact sheet, contact the DTSC Regulatory Assistance Officers. You can call them at 800-728-6942, or contact them through the Department of Toxic Substances Control website — <http://www.dtsc.ca.gov> — follow the “Contact us” then “Regulatory Assistance Officers” links to the page listing each of the Regulatory Assistance Officers [email](#) addresses or at RAO@dtsc.ca.gov.

DTSC Regulatory Assistance Officers role is to provide informal guidance regarding management of hazardous waste for the convenience of the public. Such advice is not binding upon DTSC, nor does it have the force of law. If you would like a formal opinion on a matter by DTSC, please contact the responsible program office directly. You should also refer to the statutes and regulations, DTSC Policies and Procedures, and other formal documents.

We also encourage you to complete a Cal/EPA Customer Satisfaction survey <http://www.calepa.ca.gov/ContactUs/> so that we may improve our Regulatory Assistance Office.



**15. Hazardous Waste Generator Requirements -
California Department of Toxic Substances**

**16. Accumulation Storage Time Limitations for
Hazardous Wastes – Ca DTSC**



**Los Angeles County Certified Unified Program Agency
Health Hazardous Materials Division**



ACCUMULATION STORAGE TIME LIMITS FOR HAZARDOUS WASTE

FACT SHEET 05-04-HW

JUNE 2005

This fact sheet summarizes the hazardous waste accumulation storage time limits for the three hazardous waste generator categories: large quantity generators, small quantity generators, and conditionally exempt small quantity generators. Generators are categorized primarily by their rate of hazardous waste generation (i.e., kilograms per month). The types and quantities of hazardous waste also must be evaluated to ensure that the generator is categorized correctly. This fact sheet also addresses satellite accumulation and speculative accumulation.

LARGE QUANTITY GENERATOR

A business is a large quantity generator (LQG) if the business:

- Generates (in any calendar month) 1,000 kilograms (2,200 pounds) or more of hazardous waste; or
- Generates (in any calendar month) more than one kilogram (2.2 pounds) of extremely or acutely hazardous waste (AHW) or 100 kilograms of debris resulting from the spill of an AHW; or
- Accumulates on-site more than 6,000 kilograms (13,200 pounds) of hazardous waste at any time.

The hazardous waste accumulation storage time limit at LQG facility is 90 days. The 90-day period for accumulation starts the FIRST DAY the generator begins accumulating any hazardous waste.

SMALL QUANTITY GENERATOR

A business is a small quantity generator (SQG) if the business generates (in any calendar month) between 100 and 1,000 kilograms (220 and 2,200 pounds) of hazardous waste (and less than one kilogram of an AHW) and accumulates no more than 6,000 kilograms of hazardous waste onsite at any time.

The hazardous waste accumulation storage time limit at a SQG facility is 180 days. The 180-day period for accumulation starts the FIRST DAY the generator begins accumulating any hazardous waste. If the waste MUST be transported over a distance of 200 miles or more, the generator may store the waste onsite for up to 270 days. The generator cannot store an AHW in an amount greater than one kilogram (2.2 pounds) for more than 90 days.

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR

A business is a conditionally exempt small quantity generator (CESQG) if the business generates (in any calendar month) less than 100 kilograms (220 pounds) of hazardous waste (and less than one kilogram of an AHW).

The hazardous waste accumulation storage time limit at a CESQG is 90 days. However, the 90-day period for accumulation starts once 100 kilograms of hazardous waste (or one kilogram of an AHW) have accumulated. There is no accumulation time limit at a CESQG facility that has not yet accumulated 100 kilograms (220 pounds) of hazardous waste or one kilogram (2.2 pounds) of an AHW.

ACCUMULATION STORAGE TIME LIMITS FOR HAZARDOUS WASTE

FACT SHEET 05-04-HW

PAGE 2

JUNE 2005

SATELLITE ACCUMULATION

Satellite accumulation is the collection of hazardous waste in a container (not in a tank) located at or near the point (i.e., process or piece of equipment) where the waste is generated. The container must be under the control of the operator of the waste generation process. The general requirements for Satellite Accumulation consist of the following:

- *Quantity Limits* - No more than 55 gallons of a hazardous waste or one quart of an AHW may be accumulated at each satellite accumulation point. These limits apply to each waste stream. The generator can accumulate more than one waste in each satellite accumulation area.
- *Accumulation Time Limits* – The generator can keep a satellite accumulation container on-site for a maximum of one year from the date waste is first placed in the container, or 90 or 180 days from the date the generator accumulates 55 gallons of hazardous waste or one quart AHW, whichever occurs first.

SPECULATIVE ACCUMULATION

A hazardous material becomes a hazardous waste if it is accumulated speculatively. Speculative accumulation means that a material is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that, during the calendar year (commencing on January 1), the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75% by weight (or volume) of the amount of that accumulated at the beginning of the period. Also, a generator may be considered as a speculative accumulator if retrograde materials are stored onsite for extended periods of time.

Retrograde materials are any hazardous materials that are not used or sold for use in an originally intended purpose and which meets one or more of the following criteria:

- It has undergone chemical, biochemical, physical or other changes due to the passage of time or environmental conditions under which it was stored.
- It has exceeded a specified or recommended shelf life.
- It is banned by law, regulation, ordinance or decree.
- It cannot be used for reasons of economics, health/safety or environmental hazard.

Retrograde material becomes a recyclable material if it has not been used, distributed or reclaimed through treatment one year after the date the material becomes a retrograde material (or one year after the material is returned to the original manufacturer).

NOTE: *This fact sheet is a summary of the laws and regulations pertaining to this subject. It is intended for informational purposes only and may not encompass all the laws and regulations to this topic. More details may be found at Cal/EPA Department of Toxic Substance Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045, or your local district office.*

References

- California Health and Safety Code 25123.3(c)
- 22 California Code of Regulations 66262.34

17. Management of Waste Aerosols Cans - Los Angeles County Fire Department – Health HazMat



Los Angeles County Certified Unified Program Agency Health Hazardous Materials Division



MANAGEMENT OF WASTE AEROSOL CANS

FACT SHEET 07-05-HW

July 2007

This fact sheet summarizes the regulatory requirements for the management of hazardous waste aerosol cans established by SB 1158, effective January 1, 2002. With the implementation of SB 1158, generators of hazardous waste aerosol cans have the option of managing the cans as *hazardous waste* or as *universal waste*. Under the universal waste rule, generators are allowed to process the cans by puncturing, draining, or crushing onsite under certain conditions. SB 1158 deleted from Health and Safety Code Section 25201.14, the authorization requirement from DTSC under the Conditionally Exempt-Limited Tier for onsite treatment of hazardous waste. In its place, HSC Section 25201.16 was added which made processing of hazardous waste aerosol cans a universal waste activity.

The aerosol can puncturing and draining provisions of SB 1158 *do not* apply to commercial universal waste handlers such as offsite hazardous waste facilities, hazardous waste transporters, or transfer facilities. Homeowners and small generators of non-empty aerosol cans are not allowed to dispose of the cans in the trash.

HAZARDOUS WASTE AEROSOL CANS

Aerosol cans are not hazardous waste when they have been emptied of contents, but *non-empty* aerosol cans may be hazardous wastes. Non-empty aerosol cans are commonly discarded when the spray mechanism is damaged or clogged and no longer working, the propellant has been exhausted, or the product is no longer needed.

A non-empty aerosol can is a hazardous waste if the propellant or product has any of the following characteristics:

- Ignitability (can readily catch fire)
- Corrosivity (acidic or alkaline)
- Reactivity (can explode)
- Toxicity (poisonous)

MANAGEMENT REQUIREMENTS OF UNIVERSAL WASTE AEROSOL CANS

All handlers of universal waste aerosol cans must comply with the requirements of HSC Section 25201.16.

Notification Requirements:

Notify your local CUPA or authorized agency if you process universal waste cans or of any change in operation that changes the information originally provided. The notification can be given in person, or by letter, via certified mail, with return receipt requested.

MANAGEMENT OF WASTE AEROSOL CANS

Containment Requirements:

- Accumulate and transport universal waste aerosol cans in containers that are structurally sound, compatible with the contents of the can, and show no evidence of leaks, spills, or damage that would cause leaks;
- Keep the accumulation containers closed, except when waste is being added or removed;
- Place accumulation containers in a location with sufficient ventilation;
- Place containers of processed cans and the unit used to process aerosol cans above a non-earthen floor that is free of cracks or gaps and is sufficiently impervious and bermed to contain leaks and spills;
- Keep containers of flammable waste a safe distance from heat and open flames;
- Place aerosol cans in containers that are designed, built, and maintained to withstand pressures reasonably expected during storage and transportation;
- Label containers of universal waste cans with one of the following phrases: "Universal Waste-Aerosol Cans," "Waste Aerosol Cans," or "Used Aerosol Cans,";
- Segregate incompatible materials in separate containers;
- Sort cans by type and compatibility of contents.

Handling Requirements:

- Manage the universal waste aerosol cans to prevent fire, explosion, and unauthorized releases to the environment;
- Develop and implement a written operating procedure for safely processing universal waste aerosol cans and handling emergencies;
- Provide a spill clean-up kit and promptly clean-up any spills or leaks of the contents of universal waste aerosol cans;
- Promptly transfer the contents of the drained aerosol cans from the processing device to appropriate containers that meet specified requirements;
- Process the universal waste cans in a well-ventilated area;
- Train employees on the procedure for sorting and processing aerosol cans and handling emergencies.

Residuals Management Requirement:

Any hazardous waste generated from processing the universal waste aerosol cans shall be managed in accordance with the requirements of Chapter 12 of Division 4.5 of Title 22 of the California Code of Regulations.

NOTE: *This fact sheet is a summary of the laws and regulations pertaining to this subject. It is intended for informational purposes only and may not encompass all the laws and regulations to this topic. More details may be found at Cal/EPA Department of Toxic Substance Control (DTSC) www.dtsc.ca.gov. If further information is needed, call the County of Los Angeles CUPA at (323) 890-4045, or your local district office.*

References

- California Health & Safety Code 25201.16

H.Spills Reporting

- 1. Hazardous Materials Spill and Notification Guide
CalEMA**

O E S
CALIFORNIA



Governor's Office of
Emergency Services

***Hazardous
Materials Unit***

California Hazardous Material Spill/Release Notification Guidance

To Report

all significant releases or threatened releases of hazardous materials,

First Call 9-1-1

(or the local emergency response agency)

Then Call

the Governor's Office of Emergency Services, California State Warning Center

1-800-852-7550

(if in California) or call the public number at (916) 845-8911

It's the Law!

See pages 4 & 5 for more detailed reporting requirements.

April 2006

This guidance summarizes pertinent emergency notification requirements. **For precise legal requirements, review specific laws and regulations.**

This guidance applies to all significant releases of hazardous materials. Refer to the Safe Drinking Water and Toxic Enforcement Act of 1986, better known as Proposition 65, and §9030 of the California Labor Code for additional reporting requirements.

SPILL OR RELEASE NOTIFICATION

Q: What are the emergency notification requirements in case of a spill or release of hazardous materials?

A: All significant releases or threatened releases of a hazardous material, including oil and radioactive materials, require emergency notification to government agencies. The law specifies who must notify, what information is needed, which government agencies must be notified, when they must be notified, and the release quantity or basis for the report.

WHO MUST NOTIFY

Q: Who is obligated to notify?

A: Requirements for immediate notification of all significant spills or threatened releases cover: Owners, Operators, Licensee, Persons in Charge, and Employers. Notification is required regarding significant releases from: facilities, vehicles, vessels, pipelines and railroads.

1. **State law:** Handlers, any employees, authorized representatives, agents or designees of handlers shall, upon discovery, immediately report any release or threatened release of hazardous materials (Health and Safety Code §25507).

2. **Federal law:** Notification to the National Response Center is required for all releases that equal or exceed federal reporting quantities:

- (EPCRA) Owners and Operators to report; and
- (CERCLA) Person in Charge to report

WHAT INFORMATION

Q: What information is required?

A: State notification requirements for a spill or threatened release include (as a minimum):

- Identity of caller
- Location, date and time of spill, release, or threatened release
- Location of threatened or involved waterway or stormdrains.
- Substance, quantity involved, and isotope if necessary.
- Chemical name (if known, it should be reported if the chemical is extremely hazardous)
- Description of what happened

Federal notification requires additional information for spills (CERCLA chemicals) that exceed federal reporting requirements, which includes:

- Medium or media impacted by the release
- Time and duration of the release
- Proper precautions to take
- Known or anticipated health risks
- Name and phone number for more information

WHICH AGENCIES

Q: Who must be notified?

A: Notification must be given to the following agencies:

- **The Local Emergency Response Agency**
9-1-1 or the Local Fire Department,
- **The Certified Unified Program Agency (CUPA) /Administering Agency (AA)/Participation Agency (PA), if different from local fire.**

Note: The CUPA/AA/PA may designate a call to the 911 emergency number as meeting the requirement to call the CUPA/AA/PA.

Phone: _____

enter local number

AND

- **The Governor's Office of Emergency Services, California State Warning Center**

Phone: **1 - 800 - 852 - 7550 or (916) 845-8911**, (800# for California callers only)

And, if appropriate:

- **The California Highway Patrol**

Phone: **9-1-1**

(The California Highway Patrol must be notified for spills occurring on highways in the State of California.)

In addition, as necessary, one or more of the following:

A. National Response Center

If the spill equals or exceeds CERCLA

Federal Reportable Quantities:

Phone: (800) 424 - 8802

B. United States Coast Guard

Waterway Spill / Release

Sectors

S. F. (Alameda): (415) 399 - 3547

LA/Long Beach: (310) 732 - 2043

San Diego: (619) 683 - 6470

C. California Occupational Safety and Health Administration(Cal/OSHA)

For Serious Injuries or Harmful Exposures to Workers: Cal/OSHA District Office

D. California Department of Health Services, Radiological Health Branch

All radiological incidents. Phone: California State Warning Center

E. Department of Toxic Substances Control (DTSC)

Hazardous waste tank system releases:

Secondary containment releases:

Phone appropriate DTSC Regional Office

F. Department of Conservation,

Division of Oil Gas and Geothermal

Resources (DOGGR)

Release of Oil and Gas at a Drilling and Production Facility:

Phone the appropriate DOGGR District Office

G. Public Utilities

Natural Gas Pipeline Releases:

Phone The Public Utilities Commission (PUC)

H. Department of Fish and Game, Office of Spill Prevention and Response (DFG)

Waterway Spill/Release

Phone appropriate DFG Office or the California State Warning Center

I. Regional Water Quality Control Board (RWQCB)

Waterway Spill/Release

Phone appropriate RWQCB Office

Notification must also be made to the Governor's Office of Emergency Services, California State Warning Center for the following:

- Discharges or threatened discharges of oil in marine waters
- Any spill or other release of one barrel or more of petroleum products at a tank facility
- Discharges of any hazardous substances or sewage, into or on any waters of the state
- Discharges that may threaten or impact water quality
- Any found or lost radioactive materials
- Discharges of oil or petroleum products, into or on any waters of the state
- Hazardous Liquid Pipeline releases and every rupture, explosion or fire involving a pipeline.

WHEN TO NOTIFY

Q: When must emergency notification be made?

A: All significant spills or threatened releases of hazardous materials, including oil and radioactive materials, must be **immediately** reported.

Notification shall be made by telephone.

Also, written Follow-Up Reports (Section 304) are required within 7 days if the release equals or exceeds the Federal Reportable Quantities (see web sites for more information).

WRITTEN REPORTS

Q: When are written reports required?

A: Different laws have different time requirements and criteria for submitting written reports. After a spill or release of hazardous materials, including oil and radioactive materials, immediate verbal emergency notification should be followed up as soon as possible with a Written Follow-Up Report, if required, to the following agencies:

- 1) Governor's Office of Emergency Services,
Section 304 Follow-up Report

- 2) The responsible regulating agency such as:
 - California Department of Health Services,
Radiological Health Branch,
Radiological Incident Reporting.
 - Department of Toxic Substances Control,
Facility Incident or Tank System Release Report
 - Cal/OSHA, serious injury or harmful exposure to workers

- 3) U.S. DOT and DOE, transportation-related incidents.

PENALTIES

Federal and state laws provide for administrative penalties of up to \$25,000 per day for each violation of emergency notification requirements. Criminal penalties may also apply.

STATUTES

Q: What statutory provisions require emergency notification?

A: Many statutes require emergency notification of a hazardous chemical release, including:

- Health and Safety Code §25270.7, 25270.8, 25507
- Vehicle Code §23112.5
- Public Utilities Code §7673
(PUC General Orders #22-B, 161)
- Government Code §51018, 8670.25.5 (a)
- Water Code §13271, 13272
- California Labor Code §6409.1 (b)
- Title 42, U. S. Code §9603, 11004
- California Fire Code §8001.5.2.2

Q: What are the statutory provisions for Written Follow-Up Reports?

A: Written reports are required by several statutes, including:

- Health and Safety Code §25503 (c) (9)
- California Labor Code §6409.1 (a)
- Water Code §13260, 13267
- Title 42, U. S. Code §11004
- Government Code § 51018

REGULATIONS

In addition to statutes, several agencies have notification or reporting regulations:

- Title 8, CCR, §342
- Title 13, CCR, §1166
- Title 14, CCR, §1722 (h)
- Title 17, CCR, §30295
- Title 19, CCR, §2703, 2705
- Title 22, CCR, §66265.56 (j), 66265.196 (e)
- Title 23, CCR, §2230, 2250, 2251, 2260
- Title 49 CFR, Parts 100 - 177,
esp. §171.15, and Part 263, §263.30
- Title 49 CFR, §171.16

WEB SITES

State Regulations

<http://www.leginfo.ca.gov/calaw.html>

<http://www.oes.ca.gov>

Federal Regulations

<http://www.gpoaccess.gov/fr/index.html>

Federal Reportable Quantities

<http://www.epa.gov/superfund/resources/rq/>

See California Labor Code §9030 and the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) for other reporting requirements.

DEFINITIONS

Q: What is a “Hazardous Material”?

A: “Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or threatened hazard to human health and safety or to the environment, if released into the workplace or the environment” (Health and Safety Code, §25501 (o)).

Q: What is a release?

A: “Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency” (Health and Safety Code, §25501 (s) and CERCLA §101 (22))

Q: What hazardous material releases require notification?

A: All significant spills, releases, or threatened releases of hazardous materials must be **immediately** reported.

In addition, all releases that result in injuries, or workers harmfully exposed, **must be immediately** reported to Cal/OSHA (CA Labor Code §6409.1 (b)). Notification covers significant releases or threatened releases relating to all of the following:

1) “Hazardous Materials” as defined by §25501(o), California Health and Safety Code

2) “Hazardous Substances” as listed in 40 CFR §302.4; the Clean Water Act §307, §311; CERCLA §102; RCRA §3001; Clean Air Act §112; Toxic Substances Control Act §7 and as defined by California Health and Safety Code §25501 (p)

- 3) "Extremely Hazardous Substances" as required by: Chapter 6.95 Health and Safety Code, EPCRA §302
- 4) "Radioactive Materials" as required by Title 17 §30100.
- 5) Illegal releases of hazardous waste
- 6) Employee exposures resulting in injuries: California Labor Code §6409.1 (b)
- 7) "Sewage" as required by Title 23 §2250 (a) (Reportable quantity is 1,000 gallons or more for municipal and private utility waste water treatment plants).

ACRONYMS

- AA- Administering Agency
- Cal/OSHA - California Occupational Safety and Health Administration
- CCR - California Code of Regulations
- CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act (aka Superfund)
- CFR - Code of Federal Regulations
- CHP - California Highway Patrol
- CUPA - Certified Unified Program Agency
- DOGGR - California Division of Oil, Gas, and Geothermal Resources
- DTSC - Department of Toxic Substances Control
- EPCRA - Emergency Planning and Community Right-to-Know Act (SARA Title III)
- OES - Governor's Office of Emergency Services
- PA - Participation Agency
- PUC - Public Utilities Commission
- RCRA - Resource Conservation and Recovery Act
- U.S.DOT - Federal Department of Transportation

CONTRIBUTORS

This guidance was developed with input from the following agencies:

Governor's Office of Emergency Services

Office of the State Fire Marshal

California Highway Patrol

California Environmental Protection Agency

Department of Toxic Substances Control

State Water Resources Control Board

Air Resources Board

Department of Pesticide Regulation

California Integrated Waste Management Board

Department of Fish and Game

Department of Food and Agriculture

Department of Health Services

Department of Industrial Relations

Cal-OSHA

Department of Transportation (CalTrans)

U. S. Environmental Protection Agency,

Region IX

Department of Conservation, Division of Oil, Gas,
and Geothermal Resources

Department of Water Resources

**- Emergency Notification Summary -
Telephone Calls Required For
All Significant Releases or Threatened Releases
of Hazardous Materials
At a MINIMUM, the spiller should call:**

- 1. 9-1-1 or local Emergency Response
Agency (e.g. fire department)
AND**
- 2. Local CUPA/AA/PA
AND**
- 3. The Governor's Office of Emergency
Services, California State Warning Center
1-800-852-7550 or 916-845-8911**

In addition to 911 and OES above, the following apply under varying circumstances:

- All releases that equal or exceed Federal Reportable Quantities (CERCLA) - **Call the National Response Center (NRC) 1-800-424-8802**
- All releases on-highway - **Call California Highway Patrol**
- All hazardous waste tank releases - **Call Department of Toxic Substances Control**

Regional Office

- All serious worker injuries or harmful exposures - **Call Cal/OSHA District Office**
- All oil spills at drilling and production fixed facilities - **Call Conservation**

Department, Division of Oil, Gas, and Geothermal Resources

- All spills with a potential to impact water quality - **Call OES**
- All significant potential or actual railroad releases (California definition of hazardous materials)

Railroad should call - Local Emergency Response Agency and PUC

- All Hazardous Liquid Pipelines - **Call local fire department**
(Hazardous Liquid Pipeline Safety is State Fire Marshal jurisdiction)
- All Natural Gas Pipelines - **Call PUC**
- All incidents involving **Radioactive** Material call the CDHS, Radiological Preparedness Branch

For Questions on the federal
Emergency Planning and
Community Right-to-Know Act
Call EPCRA Title III Hotline:
1 - 800 - 424 - 9346

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2. Reporting Sewage Releases Fact Sheet - CalEMA



FACT SHEET

Reporting Sewage Releases

July 2006

Reporting Sewage Releases:

In the past, there have been occurrences where untreated sewage was released into drinking water sources and was not properly reported to the Governor's Office of Emergency Services (OES). Proper and timely notification is imperative to allow government agencies and downstream users to take prompt action to protect public health and safety, the environment, and drinking water supplies. The purpose of this Fact Sheet is to help clarify the reporting requirements for sewage releases in California, under California Water Code §13271, *et seq.* and California Health and Safety Code §5411, *et seq.*

State Law requires that an unauthorized discharge of sewage [as defined in 23 California Code of Regulations (CCR) 2250 (b)] into or onto state waters must be reported to **OES**. Upon such notification, OES will then immediately notify the appropriate **Regional Water Quality Control Board (RWQCB)**, the **local public health department**, and **local office of environmental health**. These offices are responsible for determining appropriate public and environmental safety measures.

Report Sewage Releases to:

Governor's Office of Emergency Services
Warning Center
(800) 852-7550

The **Reportable Quantity** for sewage spills is **1000 gallons or more**, as established in regulation [23 CCR 2250 (a)]

Please note that the Regional Water Quality Control Boards and Local Health Departments may have additional reporting requirements – please contact them to see what requirements apply to you!

Are There Any Exceptions?

Notification of an unauthorized discharge of sewage or hazardous substances, under section 13271 (b) of the State Water Code, is not required if the discharge is in compliance with waste discharge requirements.

Penalties For Not Reporting:

Any person who fails to provide the proper notifications is guilty of a misdemeanor and may be punished by a fine of not more than \$20,000 dollars or imprisonment for not more than 1 year or both, per section 13271 (c) of the State Water Code. Additional penalties can be administered under Health and Safety Code §5411, *et seq.*

Additional Information:

Further information on reporting requirements can be located on the OES Website at www.oes.ca.gov in the *California Hazardous Material Spill/Release Notification Guidance* booklet. Please call the OES Hazardous Materials Unit at **(916) 845-8741** to answer any further questions.

i. Injury Illness and Prevention Planning - CalOSHA

Guide to Developing

Your Workplace Injury & Illness Prevention Program



**with checklists for
self-inspection**



CS-I revised August 2005 Cal/OSHA Consultation Service

State of California-Department of Industrial Relations- Division of Occupational Safety & Health

About This Guide

In California every employer has a legal obligation to provide and maintain a safe and healthful workplace for employees, according to the California Occupational Safety and Health Act of 1973. As of 1991, a written, effective Injury and Illness Prevention (IIP), Program is required for every California employer.

This manual describes the employers' responsibilities in establishing, implementing, maintaining, an IIP Program. It also outlines steps that can be taken to develop an effective Program that helps assure the safety and health of employees while on the job.

The term "employer" as used in the Cal/OSHA Act includes any person or corporation, the State and every State agency, every county or city or district and public agency therein, which has any person engaged in or permitted to work for hire, except for household services.

This manual is designed to help employers provide better workplace protection for their employees, and to reduce losses resulting from accidents and injuries. The material in this publication is based on principles and techniques developed by occupational safety and health professionals nationwide. It is intended to provide guidance, rather than prescribe requirements, and is not intended as a legal interpretation of any state standard.

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Why Have a Workplace Injury and Illness Prevention Program?

Taking risks is a part of running a business, particularly for small business owners. You take risks in product development, marketing, and advertising in order to stay competitive. Some risks are just not worth the gamble. One of these is risking the safety and health of those who work for you.

Accidents Cost Money

Safety organizations, states, small business owners and major corporations alike now realize that the actual cost of a lost workday injury is substantial. For every dollar you spend on the direct costs of a worker's injury or illness, you will spend much more to cover the indirect and hidden costs. Consider what one lost workday injury would cost you in terms of:

- Productive time lost by an injured employee;
- Productive time lost by employees and supervisors attending the accident victim;
- Clean up and start up of operations interrupted by the accident;
- Time to hire or to retrain other individuals to replace the injured worker until his/her return;
- Time and cost for repair or replacement of any damaged equipment or materials;
- Cost of continuing all or part of the employee's wages, in addition to compensation;
- Reduced morale among your employees, and perhaps lower efficiency; Increased workers' compensation

insurance rates; and

- Cost of completing paperwork generated by the incident.

Controlling Losses

If you would like to reduce the costs and risks associated with workplace injuries and illnesses, you need to address safety and health right along with production.

Setting up an Injury and Illness Prevention Program helps you do this. In developing the program, you identify what has to be done to promote the safety and health of your employees and worksite, and you outline policies and procedures to achieve your safety and health goals.

Cal/OSHA Injury & Illness Prevention Program

In California every employer is required by law (Labor Code Section) to provide a safe and healthful workplace for his/her employees. Title 8 (T8), of the California Code of Regulations (CCR), requires every California employer to have an effective Injury and Illness Prevention Program in writing that must be in accord with T8 CCR Section 3203 of the General Industry Safety Orders. Additional requirements in the following T8 CCR Safety Order Sections address specific industries:

Construction—Section 1509;
Petroleum—Sections 6507, 6508, 6509, 6760, 6761, 6762;
Ship Building, Ship Repairing,
Ship Breaking—Section 8350; and
Tunnels—Section 8406.

For your convenience Section 3203 (General Industry) and Section 1509 (Construction) are reproduced here.

What is an Injury & Illness Prevention Program?

Your Injury and Illness Prevention Program must be a written plan that includes procedures and is put into practice. These elements are required:

- Management commitment/assignment of responsibilities;
- Safety communications system with employees;
- System for assuring employee compliance with safe work practices;
- Scheduled inspections/evaluation system;
- Accident investigation;
- Procedures for correcting unsafe/unhealthy conditions;
- Safety and health training and instruction; and
- Recordkeeping and documentation.

Management Commitment/Assignment of Responsibilities

Your commitment to safety and health shows in every decision you make and every action you take. Your employees will respond to that commitment.

The person or persons with the authority and responsibility for your safety and health program must be identified and given management's full support. You can demonstrate your commitment through your personal concern for employee safety and health and by the priority you place on these issues.

If you want maximum production and quality, you need to control potential work-place hazards and correct hazardous conditions or

practices as they occur or are recognized.

You must commit yourself and your company by building an effective Injury and Illness Prevention Program and integrating it into your entire operation.

This commitment must be backed by strong organizational policies, procedures, incentives, and disciplinary actions as necessary to ensure employee compliance with safe and healthful work practices.

They should include:

1. Establishment of workplace objectives for accident and illness prevention, like those you establish for other business functions such as sales or production for example: "Ten percent fewer injuries next year," "Reduce down-time due to poorly maintained equipment."
2. Emphasis on your staff's safety and health responsibilities and recognition by your supervisors and employees that they are accountable. Advise your management staff that they will be held accountable for the safety record of the employees working under them, and then back it up with firm action.
3. A means for encouraging employees to report unsafe conditions with assurance that management will take action.
4. Allocation of company resources financial, material and personnel for:
 - Identifying and controlling hazards in new and existing operations and processes, and

potential hazards.

- Installing engineering controls.
- Purchasing personal protective equipment.
- Promoting and training employees in safety and health.

5. Setting a good example! If, for instance, you require hard hats to be worn in a specific area, then you and other management wear a hard hat in that area.

If you and your management team do not support and participate in the program, you are doomed to failure from the start. It is especially important for plant supervisors and field superintendents to set a good example.

Safety Communications

Your program must include a system for communicating with employees - in a form readily understandable by all affected employees - on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal.

While this section does not require employers to establish labor-management safety and health committees, it is an option you should consider. If you choose to do so, remember that employers who elect to use a labor-management safety and health committee to comply with the communication requirements are presumed to be in substantial compliance if the committee:

1. Meets regularly but not less than quarterly.
2. Prepares and makes available to affected employees written records of the safety and health issues discussed at the committee

meetings, and maintained for review by the Division upon request.

3. Review results of the periodic scheduled worksite inspections.
4. Reviews investigations of occupational accidents and causes of incidents resulting in occupational injury, occupational illness or exposure to hazardous substances, and where appropriate, submits suggestions to management for the prevention of future incidents.
5. Reviews investigations of alleged hazardous conditions brought to the attention of any committee member. When determined necessary by the committee, it may conduct its own inspection and investigation to assist in remedial solutions.
6. Submits recommendations to assist in the evaluation of employee safety suggestions.
7. Upon request of the Division, verifies abatement action taken by the employer to abate citations issued by the Division.

If your employees are not represented by an agreement with an organized labor union, and part of your employee population is unionized, the establishment of labor-management committees is considerably more complicated. You should request clarification from the Cal/OSHA Consultation Service.

If you elect not to use labor-management safety and health committees, be prepared to formalize and document your required system for communicating with employees.

Here are some helpful tips on complying with this difficult section:

1. Your communication system must be in a form "readily understandable by all affected employees." This means you should be prepared to communicate with employees in a language

they can understand, and if an employee cannot read in any language, you must communicate with him/her orally in a language “readily understandable.” Your communication system must be “designed to encourage employees to inform the employer of hazards at the workplace without fear of reprisal” it must be a two-way system of communication.

2. Schedule general employee meetings at which safety is freely and openly discussed by those present. Such, meetings should be regular, scheduled, and announced to all employees so that maximum employee attendance can be achieved. Remember to do this for all shifts. Many employers find it cost effective to hold such meetings at shift change time, with a brief overlap of schedules to accomplish the meetings. If properly planned, effective safety meetings can be held in a 15 to 20 minute time frame. Concentrate on:

- Occupational accident and injury history at your own worksite, with possible comparisons to other locations in your company.
 - Feedback from the employee group.
 - Guest speakers from your worker’s compensation insurance carrier or other agencies concerned with safety.
 - Brief audio-visual materials that relate to your industry.
 - Control of the meetings.
- Stress that the purpose of the meeting is safety. Members of management should attend this meeting.

3. Training programs are excellent vehicles for communicating with employees.

4. Posters and bulletins can be very effective ways of communicating with employees. Useful materials can be obtained from Cal/OSHA, your workers’ compensation insurance carrier, the National Safety Council or other commercial and

public service agencies.

5. Newsletters or similar publications devoted to safety are also very effective communication devices. If you cannot devote resources to an entire publication, make safety a featured item in every issue of your company newsletter.

6. A safety suggestion box can be used by employees, anonymously if desired, to communicate their concerns to management.

7. Publish a brief company safety policy or statement informing all employees that safety is a priority issue with management, and urge employees to actively participate in the program for the common good of all concerned. (Model policy, statements are found in Appendix A.)

8. Communicate your concerns about safety to all levels of management.

9. Document all communication efforts, as you will be required to demonstrate that a system of effective communication is in place.

Hazard Assessment & Control

Periodic inspections and procedures for correction and control provide a method of identifying existing or potential hazards in the workplace, and eliminating or controlling them. Hazard control is the heart of an effective Injury and Illness Prevention Program.

If hazards occur or recur, this reflects a breakdown in the hazard control system. The hazard control system is also the basis for developing safe work procedures and injury/illness prevention training.

The required hazard assessment survey of your establishment, when first developing your Injury and Illness Prevention Program, must be made by a qualified person. This survey can provide the basis and guide for establishing your hazard assessment and control system. The survey produces knowledge of hazards that exist in the workplace, and conditions, equipment and

procedures that could be potentially hazardous.

An effective hazard control system will identify: hazards that exist or develop in your workplace, how to correct those hazards, and steps you can take to prevent their recurrence. If you have an effective system for monitoring workplace conditions:

1. You will be able to prevent many hazards from occurring through scheduled and documented self-inspections. Make sure established safe work practices are being followed and those unsafe conditions or procedures are identified and corrected properly. Scheduled inspections are in addition to the everyday safety and health checks that are part of the routine duties of managers and supervisors.

The frequency of these inspections depends on the operations involved, the magnitude of the hazards, the proficiency of employees, changes in equipment or work processes, and the history of work-place injuries and illnesses. Inspections should be conducted by personnel who, through experience or training, are able to identify actual and potential hazards and understand safe work practices.

Written inspection reports must be reviewed by management and/or the safety committee. The review should assist in prioritizing actions and verify completion of previous corrective actions. Overall inspection program results should be reviewed for trends.

Know which Cal/OSHA safety orders contained in Title 8 of the California Code of Regulations apply to your workplace and use them to identify potential hazards. A Cal/OSHA Consultation Service consultant or outside consultant can assist you in identifying safety orders applicable to your work.

2. Your employees should be encouraged to tell you or their supervisors of possibly

hazardous situations, knowing their reports will be given prompt and serious attention without fear of reprisal. When you let them know that the situation was corrected (or why it was not hazardous), you create a system by which your employees continue to report hazards promptly and effectively.

3. Workplace equipment and personal, protective equipment should be maintained in safe and good working condition. In addition to what is required by Cal/ OSHA standards, your own program monitors the operation of workplace equipment, and can also verify that routine preventive maintenance is conducted and personal protective equipment is reliable. This makes good safety sense, and proper maintenance can prevent costly breakdowns and undue exposures.

4. Hazards should be corrected as soon as they are identified. For any that can't be immediately corrected, set a target date for correction based on such considerations as the probability and severity of an injury or illness resulting from the hazard; the availability of needed equipment, materials and/or personnel; time for delivery, installation, modification or construction; and training periods.

Provide interim protection to employees who need it while correction of hazards is proceeding. A written tracking system such as a log helps you monitor the progress of hazard correction.

5. You should review and prioritize your program based on the severity of the hazard.

Accident Investigation

A primary tool you should be using in an effort to identify and recognize the areas responsible for accidents is a thorough and properly completed accident investigation. It should be in writing and adequately identify the cause(s)

of the accident or near-miss occurrence.

Accident investigations should be conducted by trained individuals, and with the primary focus of understanding why the accident or near miss occurred and what actions can be taken to preclude recurrence. In large organizations this responsibility may be assigned to the safety director. In smaller organizations the responsibility may lie directly with the supervisor responsible for the affected area or employee. Questions to ask in an accident investigation include:

1. What happened?

The investigation should describe what took place that prompted the investigation: an injury to an employee, an incident that caused a production delay, damaged material or any other conditions recognized as having a potential for losses or delays.

2. Why did the incident happen?

The investigation must obtain all the facts surrounding the occurrence: what caused the situation to occur; who was involved; was/were the employee(s) qualified to perform the functions involved in the accident or near miss; were they properly trained; were proper operating procedures established for the task involved; were procedures followed, and if not, why not; where else this or a similar situation might exist, and how it can be corrected.

3. What should be done?

The person conducting the investigation must determine which aspects of the operation or processes require additional attention. It is important to note that the purpose here is not to establish blame, but to determine what type of constructive action can eliminate the cause(s)

of the accident or near miss.

4. What action has been taken?

Action already taken to reduce or eliminate the exposures being investigated should be noted, along with those remaining to be addressed. Any interim or temporary precautions should also be noted. Any pending corrective action and reason for delaying its implementation should be identified.

Corrective action should be identified in terms of not only how it will prevent a recurrence of the accident or near miss, but also how it will improve the overall operation. This will assist the investigation in selling his/her solutions to management. The solution should be a means of achieving not only accident control, but also total operation control.

If you have a safety and health committee, its members should review investigations of all accidents and near-miss incidents to assist in recommending appropriate corrective actions to prevent a similar recurrence.

Thorough investigation of all accidents and near misses will help you identify causes and needed corrections, and can help you determine why accidents occur, where they happen, and any accident trends. Such information is critical to preventing and controlling hazards and potential accidents.

Safety Planning, Rules & Work Procedures

Planning for safety and health is an important part of every business decision, including purchasing, engineering, changes in work processes, and planning for emergencies. Your safety and health planning are effective when your workplace has:

1. Rules written to apply to everyone and addressing areas such as personal protective equipment, appropriate clothing, expected behavior, and emergency procedures. You and your

employees should periodically review and update all rules and procedures to make sure they reflect present conditions.

Rules and procedures should be written for new exposures when they are introduced into the workplace.

2. Safe and healthful work practices developed for each specific job.

3. Discipline or reward procedures to help assure that safety rules and work procedures are put into practice and enforced. Reward or positive reinforcement procedures such as bonus, incentive or employee recognition programs should provide positive motivation for compliance with safety rules and procedures.

4. A written plan for emergency situations. Your plan must include a list of emergencies that could arise and a set of procedures in response to each situation. Some emergency procedures, such as those covering medical emergencies or fire evacuation, are mandated by Cal/OSHA regulations.

If you have operations involving hazardous substances, procedures or processes, you must designate emergency response teams to be specifically trained and equipped to handle possible imminent hazards.

Safety & Health Training

Training is one of the most important elements of any Injury and Illness Prevention Program. It allows employees to learn their job properly, brings new ideas into the workplace, reinforces existing ideas and practices, and puts your program into action.

Your employees benefit from safety and health training through fewer work-related injuries and illnesses, and reduced stress and

worry caused by exposure to hazards.

You benefit from reduced workplace injuries and illnesses, increased productivity, lower costs, higher profits, and a more cohesive and dependable work force.

An effective Injury and Illness Prevention Program includes training for both supervisors and employees. Training for both is required by Cal/OSHA safety orders.

You may need outside professionals to help you develop and conduct your required training program. Help is available from the Cal/OSHA Consultation Service, your workers' compensation insurance carrier, private consultants and vendor representatives.

Outside trainers should be considered temporary. Eventually you will need your own in-house training capabilities so you can provide training that is timely and specific to the needs of your workplace and your employees.

To be effective and also meet Cal/OSHA requirements, your training program needs to:

1. Let your supervisors know:

- They are key figures responsible for establishment and success of your Injury and Illness Prevention Program.
- The importance of establishing and maintaining safe and healthful working conditions.
- They are responsible for being familiar with safety and health hazards to which their employees are exposed, how to recognize them, the potential effects these hazards have on the employees, and rules, procedures and work practices for controlling exposure to those hazards.
- How to convey this information to employees by setting good examples, instructing them, making sure they fully

understand and follow safe procedures.

- How to investigate accidents and take corrective and preventive action.

2. Let your employees know:

- The success of the company's Injury and Illness Prevention Program depends on their actions as well as yours.
- The safe work procedures required for their jobs and how these procedures protect them against exposure.
- When personal protective equipment is required or needed, how to use it and maintain it in good condition.
- What to do if emergencies occur in the workplace.

An effective Injury and Illness Prevention Program requires proper job performance by everyone in the workplace. As the employer, you must ensure that all employees are knowledgeable about the materials and equipment they are working with, what known hazards are present and how they are controlled.

Each employee needs to understand that:

- No employee is expected to undertake a job until he/she has received instructions on how to do it properly and safely, and is authorized to perform the job.
- No employees should undertake a job that appears to be unsafe.
- No employee should use chemicals without fully understanding their toxic properties and without the knowledge required to work with them safely.
- Mechanical safeguards must always be in place and kept in place.
- Employees are to report to a superior or designated individual all unsafe conditions

encountered during work.

- Any work-related injury or illness suffered, however slight, must be reported to management at once.
- Personal protective equipment must be used when and where required, and properly maintained.

Your supervisors must recognize that they are the primary safety trainers in your organization. Encourage and help them by providing supervisory training. Many community colleges offer management training courses at little or no cost.

You as the employer are required under Cal/OSHA standards to establish and carry out a formal training program. A professional training person, an outside consultant or your supervisors may provide injury and illness prevention training to your employees.

This program must, at a minimum, provide training and instruction:

- To all employees when your program is first established.
- To all new employees.
- To all employees given new job assignments for which training has not been previously received.
- Whenever new substances, processes, procedures or equipment are introduced to the workplace and present a new hazard.
- Whenever you or your supervisors are made aware of a new or previously unrecognized hazard.
- For all supervisors to assure they are familiar with the safety and health hazards to which employees under their immediate direction and control may be exposed.

Getting Started on Your Injury & Illness Prevention Program

Put the elements (see page 7) of an Injury and Illness Prevention Program together, and come up with a plan to suit your individual workplace. Decide exactly what you want to accomplish, and determine what steps are necessary to achieve your goals.

Then plan out how and when each step will be carried out and who will do it and put this plan in writing. In developing the plan, consider your company's immediate needs and provide for ongoing worker protection.

If you have difficulty deciding where to begin, call the Cal/OSHA Consultation Service for assistance. A Consultation Service consultant can help you determine what is needed to make your Injury and Illness Prevention Program effective. The consultant will work with you on a plan for making these improvements, and assist you in establishing procedures for making sure your program remains effective.

The following sections describe the process you might go through in establishing an Injury and Illness Prevention Program. Remember that you do not have to do everything described in this manual at once.

Assign Responsibilities

Decide who in your company will be given responsibility and authority to manage this program. In many cases, it's the owner.

Sometimes the plant manager or a ranking member of the management team is the one to develop and set up the program. It could even be an engineer, personnel specialist or other staff member.

The person assigned must be identified by name in your program. Your program's success hinges on the individual you choose, and he/she cannot succeed without your full cooperation and

support. Remember, though, that even when you appoint someone as your safety manager and delegate authority to manage the program, the ultimate responsibility for safety and health in your workplace still rests with you.

When considering responsibility, do not forget to include all of your employees. Give each employee training and responsibility to follow your safety and health procedures, and to recognize report hazards in his/her immediate work area.

All employees must be informed of their responsibility under Labor Code Section 6407.1, which requires every employee to comply with occupational safety and health standards applicable to their own actions and conduct.

Look at What You Have

Before you make any changes in your safety and health operations, gather as much information as possible about current conditions at your workplace, and work practices that are already part of your Injury and Illness Prevention Program. This information can help you identify workplace problems and determine what's involved in solving them.

Assessment of your workplace should be conducted by the person responsible for the Injury and Illness Prevention Program, and/or a professional occupational safety and health consultant.

It consists of the following activities.

Safety & Health Survey

The first is a comprehensive safety and health survey of your facility to identify existing or potential safety and health hazards.

This survey should evaluate workplace conditions with respect to: safety and health

regulations and generally recognized safe work practices and physical hazards; use of any hazardous materials; employee work habits; and a discussion of safety and health problems with employees. The survey must be documented if made for the purpose of establishing an Injury and Illness Prevention Program.

Your safety and health survey includes:

1. Equipment - Make a list of your equipment and tools, including the principle locations of their use. Special attention should be given to inspection schedules, maintenance activities and your facility's layout.
2. Chemicals - Make a list of all chemicals used in your workplace, obtain material safety data sheets on the materials used, and identify where they are used.
3. Work practices - Detail specific work practices associated with equipment, tools and chemical use. Special attention should be given to personal protective equipment, guarding, ventilation, emergency procedures and use of appropriate tools.
4. Cal/OSHA Standards - Review standards applicable to your type of operation, equipment, processes, materials, and the like. These standards are minimum requirements for workplace safety and health. Most workplaces come under Title 8, California Code of Regulations, General Industry Safety Orders. If you are involved with construction, petroleum, mining or tunneling, you will need the specific standards applicable to that industry as well.

Workplace Assessment

The next activity is an evaluation of your existing Injury and Illness Prevention Program to identify areas that may be working well and those that

may need improvement.

Examine your company's:

1. Accident, injury or illness data.
2. Worker's compensation costs.
3. Rates of employee turnover or absenteeism.
4. Information on safety and health activities ongoing or previously tried.
5. Company policy statements.
6. Rules-both work and safety.
7. Guidelines for proper work practices and procedures.
8. Records of training programs.
9. Compliance with requirements of California's Right to Know Law and Hazards Communications Standard.
10. Employee capabilities-make an alphabetical list of all employees, showing the dates they were hired, what their jobs are, and their experience and training. Special attention should be given to new employees and employees with handicaps.
11. Joint labor-management safety and health committee activities.
12. Other safety-related programs.

Review & Compare

After all the facts are gathered, look at how the information on your workplace corresponds with the standards, and with the critical components of an Injury and Illness Prevention Program: management commitment/assignment of responsibilities; safety communications system with employees; system for assuring employee compliance with safe work practices; scheduled inspections/evaluation system; accident investigation; procedures for correcting unsafe/

unhealthy conditions; safety and health training and instruction; recordkeeping and documentation.

You may find that you are already well on your way toward having a good Injury and Illness Prevention Program. Compare what you have with Appendix B.

Develop an Action Plan

An action plan is a specific, written description of problems and solutions-it can and should be changed to correspond with changes in the workplace.

A good action plan has two parts. One is an overall list of major changes or improvements needed to make your Injury and Illness Prevention Program effective. Assign each item a priority and a target date for completion, and identify the person who will monitor or direct each action.

The second part of an action plan involves taking each major change or improvement listed and working out a specific plan for making that change. Write out what you want to accomplish, the steps required, who would be assigned to do what, and when you plan to be finished. This part of the action plan helps you keep track of program improvement so that details do not slip through the cracks.

Take Action

Put your plan into action, beginning with the item assigned highest priority. Make sure it is realistic and manageable, then address the steps you have written out for that item.

You can, of course, work on more than one item at a time. Priorities may change as other needs are identified or as your company's resources change.

Open communication with your employees is crucial to the success of your efforts. Their

cooperation depends on understanding what the Injury and Illness Prevention Program is all about, why it is important to them, and how it affects their work. The more you do to keep them informed of the changes you are making, the smoother your transition will be.

By putting your action plan into operation at your workplace, you will have taken a major step toward having an effective Injury and Illness Prevention Program. Remember, an Injury and Illness Prevention Program is a plan put into practice.

Maintain Your Program

Schedule a review-quarterly, semiannually or annually-to look at each critical component in your Injury and Illness Prevention Program, to determine what is working well and what changes, if any, are needed. When you identify needs that should be addressed, you have the basis for new safety and health objectives for program improvement.

Safety & Health Recordkeeping

No operation can be successful without adequate recordkeeping, which enables you to learn from past experience and make corrections for future operations. Records of accidents, work-related injuries, illnesses and property losses serve as a valuable purpose.

Under Cal/OSHA recordkeeping requirements, information on accidents is gathered and stored. Upon review, causes can be identified and control procedures instituted to prevent the illness or injury from recurring. Keep in mind that any inspection of your workplace may require you to demonstrate the effectiveness of your program.

Injury & Illness Records

Injury and illness recordkeeping requirements under Cal/OSHA require a minimum amount of paperwork.

These records give you one measure for evaluating the success of your safety and health activities: success would generally mean a reduction or elimination of employee injuries or illnesses during a calendar year.

Five important steps are required by the Cal/OSHA recordkeeping system:

1. Each employer (unless exempt by size or industry) must record each fatality, injury, or illness that is work-related, is a new case, or meets one or more of the general recording criteria specified in Title 8, Section 14300.
2. Record each injury or illness on the Cal/OSHA Log of Occupational Work Related Injuries and Illnesses (Form 300) according to its

instructions.

3. Prepare an Injury and Illness Incident Report (Form 301), or equivalent.
4. Annually review and certify the Cal/OSHA Form 300 and post the Summary of Work-Related Injuries and Illnesses (Form 300A) no later than February 1 and keep it posted where employees can see it until April 30.
5. Maintain the last five years of these records in your files.

NOTE: Additional information on recordkeeping can be found on the Internet at: www.californiaosha.info or www.dir.ca.gov/DOSH

During the year, regularly review these records to see where your injuries and illnesses are occurring. Look for any patterns or repeat situations. These records can help you identify hazardous areas in your work-place and pinpoint where immediate corrective action is needed.

Since the basic Cal/OSHA records are for reportable injuries and illnesses only, you might expand your system to include all incidents relating to workplace safety and health, even those where no injury or illness resulted. Such information can assist you in pinpointing unsafe acts, conditions or procedures.

Exposure Records

Injury and illness records may not be the only records you need to maintain. Cal/OSHA standards concerning toxic substances and hazardous exposures require records of employee exposure to these substances and sources, physical examination reports,

employment records, and other information.

Employers using any regulated carcinogens have additional reporting and recordkeeping requirements. See Title 8 of the California Code of Regulations for details.

Documentation of Your Activities

Essential records, including those legally required for workers' compensation, insurance audits, and government inspections, must be maintained for as long as required.

For most employers, Cal/OSHA standards also require that you keep records of steps taken to establish and maintain your Injury and Illness Prevention Program. They must include:

1. Records of scheduled and periodic inspections as required by the standard to identify unsafe conditions and work practices. The documentation must include the name of the person(s) conducting the inspection, the unsafe conditions and work practices identified, and the action taken to correct the unsafe conditions and work practices. The records are to be maintained for at least one year. However, employers with fewer than 10 employees may elect to maintain the inspection records only until the hazard is corrected.

2. Documentation of safety and health training required by standards for each employee. The documentation must specifically include employee name or other identifier, training dates, type(s) of training and the name of the training provider. These records must also be kept for at least one year, except that training records of employees who have worked for less than one year for the employer need not be retained beyond the term of employment if they are provided to the employee upon termination of employment.

Also, employers with fewer than 10 employees can substantially comply with the documentation

provision by maintaining a log of instructions provided to the employee with respect to the hazards unique to the employees' job assignment when first hired or assigned new duties. Some relief from documentation is available for employers with fewer than 20 employees who are working in industries that are on the Department of Industrial Relations (DIR's) designated list of low-hazard industries, and for employers with fewer than 20 employees who are not on DIR's list of high-hazard industries and who have a Workers' Compensation Experience Modification Rate of 1.1 or less. For these industries, written documentation of the Injury and Illness Prevention Program may be limited to:

1. Written documentation of the identity of the person or persons with authority and responsibility for implementing the program;
2. Written documentation of scheduled periodic inspections to identify unsafe conditions and work practices; and
3. Written documentation of training and instruction.

Keeping such records fulfills your responsibilities under General Industry Safety Order 3203. It also affords an efficient means to review your current safety and health activities for better control of your operations, and to plan future improvements.

Model Programs

Three model Injury and Illness Prevention Programs are available from Cal/OSHA. They are:

CS IA — *Workplace Injury and Illness Prevention Model Program for High Hazard Employers*

CS IB — *Workplace Injury and Illness Prevention Model Program for Non-High Hazard Employers*

CS IC — *Workplace Injury and Illness Prevention Model Program for Employers with Intermittent Workers*

There are no requirements to use these model programs. However, any employer in an industry which has been determined by Cal/OSHA as being non-high hazard and who adopts, posts, and implements the *Workplace Injury and Illness Prevention Model Program for Non-High Hazard Employers* in good faith is not subject to assessment of a civil penalty for a first violation of T8 CCR 3203.

Any employer in an industry which has been determined by Cal/OSHA to historically utilize intermittent or seasonal employees and who adopts and implements the *Workplace Injury and Illness Prevention Model Program for Employers with Intermittent Workers* in good faith is deemed to be in compliance with the IIP Program requirements of T8 CCR 3203.

Proper use of these model programs, requires the IIP Program administrator to carefully review the requirements for each of the eight IIP Program elements, fill in the appropriate blank spaces and check those items that are applicable to your workplace. Sample forms for hazard assessment and correction, accident/exposure investigation, and worker training and instruction are provided with these model programs. Also provided are lists of training subjects and

workplace checklists.

As always, these model programs must be maintained by the employer in order to be effective.

Contact the nearest Cal/OSHA Consultation Service office listed at the back of this publication to learn more about the model programs and obtain information on the different industry lists.

Sources of Information & Help

The Cal/OSHA Consultation Service can suggest sources both governmental and private for information, advice and training aids to help you develop and maintain your safety program. A surprising amount of assistance can be obtained at no cost to you, if you take time to inquire. In cases where money must be spent, it is usually money well spent.

Cal/OSHA Consultation Service

Employers who need help developing, improving or maintaining a safe and healthful place of employment can obtain free professional assistance from the Cal/OSHA Consultation Service on any of the issues or activities described in this manual. Cal/OSHA consultants help employers by:

- Identifying actual and potential safety or health hazards in the workplace and finding solutions to eliminate or control them.
- Identifying sources of help for employers in further technical assistance is needed.
- Providing a written report summarizing the finding of any consultation visit.
- Interpreting applicable safety and health standards.
- Helping establish or improve worksite Injury and Illness Prevention Programs.
- Helping develop and/or conduct safety and health training of both supervisory and non-supervisory personnel.

All services of the Cal/OSHA Consultation Service are entirely separate and distinct from the enforcement activities of the Division of Occupational Safety and Health (DOSH).

Consultants do not issue citations or assess penalties, and they do not inform DOSH of their work with an employer.

Any employer who has had a wall-wall survey performed by the Cal/OSHA Consultation Service, and has an effective Injury and Illness

Prevention Program in operation, will greatly reduce the likelihood of citations or penalties if inspected by DOSH.

Employers with fixed worksites and 250 or fewer employees at a specific worksite, can now become exempt from a DOSH discretionary compliance inspection by participating in a voluntary compliance program.

To obtain assistance or information from the Cal/OSHA Consultation Service contact any of its offices listed inside the back cover of this manual.

Other Sources

1. It is likely that businesses similar to yours have encountered similar problems. It is also possible that at least one of them has found a simple, efficient solution. Most managers are willing to share information in the area of workplace safety and health.
2. Most equipment manufacturers have also become quite concerned with safety in the use of their products. To help their customers and potential customers, and to minimize their liability in the event of adverse legal action, they are more than willing to furnish advice and engineering information to enhance safe operation of their equipment.
3. Many workers' compensation carriers, as well as liability and fire insurance companies, conduct periodic inspections and visits to evaluate safety and health hazards and give guidance and assistance in establishing and monitoring your program. Contact your carrier to see what it has to offer.
4. Many trade associations and employer groups emphasize safety and health matters to better serve their members. If you are not a member, find out if these groups are circulating their materials to non-members, as many do.
5. If your employees are organized, coordinate with their unions for taking joint action to solve problems and correct hazards. Many

trade unions have safety and health expertise they are willing to share.

6. The National Safety Council has a broad range of information services available. Call or visit your local chapter to obtain material pertaining to your business. If a local chapter is not nearby, you can write to:

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201

7. The Hazard Evaluation System and Information Services (HESIS) offers California employer and employees answers to questions about the health effects of chemical and physical agents in the workplace. You can contact HESIS at:

HESIS
850 Marina Bay Parkway, Bldg P, 3rd Flr
Richmond, CA 94804
Telephone (510) 620-5757
Fax (510) 620-5743

8. The yellow pages of your telephone directory list many companies that specialize in items and services relating to safety and health and fire prevention. Most of them have extensive experience and knowledge in safety-related subjects, and are willing to furnish you with information and advice.

Appendix A: Model Policy Statements

“The Occupational Safety and Health Act of 1970, clearly states our common goal of safe and healthful working conditions to be the first consideration in operating this business.”

“Safety and health in our business must be part of every operation. Without questions, it is every employee’s responsibility at all levels.”

“It is intent of this company to comply with all laws. To do this, we must constantly be aware of conditions in all work areas that can produce injuries. No employee is required to work at a job he/she knows is not safe or healthful. Your cooperation in detecting hazards and, in turn, controlling them, is a condition of your employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct.”

“The personal safety and health of each employee of this company is of primary importance. Prevention of occupationally-induced injuries and illnesses is of such consequence that it will be given precedence over operating productivity, whenever necessary. To the greatest degree possible, management will provide all mechanical and physical activities required for personal safety and health, in keeping with the highest standards.”

“We will maintain a safety and health program conforming to the best practices of organizations of this type. To be successful, such a program must embody proper attitudes toward injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisor and employee, but also between each employee and his/her co-workers. Only through such a cooperative effort can a safety program in the best interest of all be established and preserved.”

“Our objective is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing, the best experience of operations similar to ours. Our goal is zero accidents and injuries.”

“Our safety and health program will include:

- Providing mechanical and physical safeguards to the maximum extent possible.
- Conducting safety and health inspections to find, eliminate or control safety and health hazards as well as unsafe working conditions and practices, and to comply fully with the safety and

health standards for every job.

- Training all employees in good safety and health practices.
- Providing necessary personal protective equipment, and instructions for use and care.
- Developing and enforcing safety and health rules, and requiring that employees cooperate with these rules as a condition of employment.
- Investigating, promptly and thoroughly, every accident to find out what caused it and correct the problem so it will not happen again.
- Setting up a system of recognition and awards for outstanding safety service or performance.”

“We recognize that the responsibilities for safety and health are shared:

- The employer accepts the responsibilities for leadership of the safety and health program, for its effectiveness and improvement, and for providing the safeguards required to ensure safe conditions.
- Supervisors are responsible for developing proper attitude toward safety and health in themselves and in those they supervise, and for ensuring that all operations are performed with the utmost regard for the safety and health of all personnel involved, including themselves.
- Employees are responsible for wholehearted, genuine operation of all aspects of the safety and health program-including compliance with all rules and regulations and for continuously practicing safety while performing their duties.”

Appendix B: Non-Mandatory Checklist Evaluation Injury & Illness Prevention Programs

- Does the written Injury and Illness Prevention Program contain the elements required by Section 3203(a)?
- Are the person or persons with authority and responsibility for implementing the program identified?
- Is there a system for ensuring that employees comply with safe and healthy work practices (i.e., employee incentives, training and retraining programs, and/or disciplinary measures)?
- Is there a system that provides communication with affected employees on occupational safety and health matter (i.e., meetings, training programs, posting, written communications, a system of anonymous notification concerning hazards and/or health and safety committees)?
- Does the communication system include provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal?
- Is there a system for identifying and evaluating workplace hazards whenever new substances, processes, procedures, or equipment are introduced to the workplace and whenever the employer receives notification of a new or previously unrecognized hazard?
- Were workplace hazards identified when the program was first established?
- Are periodic inspections for safety and health hazards scheduled?
- Are records kept of inspections made to identify unsafe conditions and work practices, if required?
- Is there an accident and near-miss investigation procedure?
- Are unsafe or unhealthy conditions and work practices corrected expeditiously, with the most hazardous exposures given correction priority?
- Are employees protected from serious or imminent hazards until they are corrected?
- Have employees received training in general safe and healthy work practices?
- Do employees know the safety and health hazards specific to their job assignments?
- Is training provided for all employees when the training program is first established?
- Are training needs of employees evaluated whenever new substances, processes, procedures, or equipment are introduced to the workplace and whenever the employer receives notification of a new or previously unrecognized hazard?
- Are supervisors knowledgeable of the safety and health hazards to which employees under their immediate direction and control may be exposed?
- Are records kept documenting safety and health training for each employee by name or other identifier, training dates, type(s) of training and training providers?
- Does the employer have a labor-management safety and health committee?
- Does the committee meet at least quarterly?
- Is a written record of safety committee meetings distributed to affected employees and maintained for Division review?
- Does the committee review results of the periodic, scheduled worksite inspections?
- Does the committee review accident and near-miss investigations and, where necessary, submit suggestions for prevention of future incidents?
- When determined necessary by the committee does it conduct its own inspections and investigations, to assist in remedial solutions?
- Does the committee verify abatement action taken by the employer as specified in Division citations upon request of the Division?

Appendix C: Code of Safe Practices

(This is a suggested code. It is general in nature and intended as a basis for preparation by the contractor of a code that fits his operations more exactly.)

GENERAL

1. All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or superintendent.
2. Foremen shall insist on employees observing and obeying every rule, regulation, and order as is necessary to the safe conduct of the work, and shall take such action as is necessary to obtain observance.
3. All employees shall be given frequent accident prevention instructions. Instructions shall be given at least every 10 working days.
4. Anyone known to be under the influence of drugs or intoxicating substances that impair the employee's ability to safely perform the assigned duties shall not be allowed on the job while in that condition.
5. Horseplay, scuffling, and other acts that tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.
6. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment.
7. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.
8. Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that is safe to enter.
9. Employees shall be instructed to ensure that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the foreman or superintendent.
10. Crowding or pushing when boarding or leaving any vehicle or other conveyance shall be prohibited.
11. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions from their foreman.
12. All injuries shall be reported promptly to the foreman or superintendent so that arrangements can be made for medical or first aid treatment.
13. When lifting heavy objects, the large muscles of the leg instead of the smaller muscles of the back shall be used.
14. Inappropriate footwear or shoes with thin or badly worn soles shall not be worn.
15. Materials, tools, or other objects shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.

Appendix D: Title 8, Section 3203 and 1509

Title 8, Section 3203. Injury and Illness Prevention Program.

- (a) Effective July 1, 1991, every employer shall establish, implement and maintain effective Injury and Illness Prevention Program. The Program shall be in writing and shall, at a minimum:
- (1) Identify the person or persons with authority and responsibility for implementing the Program.
 - (2) Include a system for ensuring that employees comply with safe and healthy work practices. Substantial compliance with this provision includes recognition of employees who follow safe and healthful work practices, training and retraining programs, disciplinary actions, or any other such means that ensures employee compliance with safe and healthful work practices.
 - (3) Include a system for communicating with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. Substantial compliance with this provision includes meetings, training programs, posting, written communications, a system of anonymous notification by employees about hazards, labor/management safety and health committees, or any other means that ensures communication with employees.
- Exception: Employers having fewer than 10 employees shall be permitted to communicate to and instruct employees orally in general safe work practices with specific instructions with respect to hazards unique to the employees' job assignments, in compliance with subsection (a)(3).
- (4) Include procedures for identifying and evaluating workplace hazards including scheduling periodic inspections to identify unsafe conditions and work practices. Inspections shall be made to identify and evaluate hazards:
 - (A) When the Program is first established;

Exception: Those employers having in place on July 1, 1991, a written Injury and Illness Prevention Program complying with previously existing Section 3203.
 - (B) Whenever new substances, processes, procedures, or equipment are introduced to the workplace that represent a new occupational safety and health hazard; and
 - (C) Whenever the employer is made aware of a new or previously unrecognized hazard.
 - (5) Include a procedure to investigate occupational injury or occupational illness.
 - (6) Include methods and/or procedures for correction of unsafe or unhealthy conditions, work practices and work procedures in a timely manner based

- on the severity of the hazard:
- (A) When observed or discovered; and
 - (B) When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, remove all exposed personnel from the area except those necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards.
- (7) Provide training and instruction:
- (A) When the program is first established;

Exception: Employers having in place on July 1, 1991, a written Injury and Illness Prevention Program complying with the previously existing Accident Prevention Program in Section 3203.
 - (B) To all new employees;
 - (C) To all employees given new job assignments for which training has not previously been received;
 - (D) Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
 - (E) Whenever the employer is made aware of a new or previously unrecognized hazard; and
 - (F) For supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.
- (b) Records of the steps taken to implement and maintain the Program shall include:
 - (1) Records of scheduled and periodic inspections required by subsection (a)(4) to identify unsafe conditions and work practices, including person(s) conducting the inspection, the unsafe conditions and work practices that have been identified and action taken to correct the identified unsafe conditions and work practices. These records shall be maintained for one (1) year; and

Exception: Employers with fewer than 10 employees may elect to maintain the inspection records only until the hazard is corrected.
 - (2) Documentation of safety and health training required by subsection (a)(7) for each employee, including employee name or other identifier, training dates, type(s) of training, and training providers. This documentation shall be maintained for one (1) year.

Exception No. 1: Employers with fewer than 10 employees can substantially comply with the documentation provision by maintaining a log of instructions provided to the employee with respect to the hazards unique to the employees' job assignment when first hired or assigned new duties.

Exception No. 2: Training records of employees who have worked for less than one (1) year for the employer need not be retained beyond the term of employment if they are

provided to the employee upon termination of employment.

Exception No. 3: California Labor Code §6401.7 states that for employers with fewer than 20 employees who are in industries that are not on a designated list of high-hazard industries established by the Department of Industrial Relations (Department) and who have a Workers' Compensation Experience Modification Rate of 1.1 or less, and for any employers with fewer than 20 employees who are in industries on a designated list of low-hazard industries established by the Department, written documentation of the Program may be limited to the following requirements:

- A. Written documentation of the identity of the person or persons with authority and responsibility for implementing the program as required by subsection (a)(1).
- B. Written documentation of scheduled periodic inspections to identify unsafe conditions and work practices as required by subsection (a)(4).
- C. Written documentation of training and instruction as required by subsection (a)(7).

Exception No. 4: California Labor Code §6401.7 states that Local governmental entities (any county, city and county, or district, or any public or quasi-public corporation or public agency therein, including any public entity, other than a state agency, that is a member of, or created by, a joint

powers agreement) are not required to keep records concerning the steps taken to implement and maintain the Program.

Note 1: Employers determined by the Division to have historically utilized seasonal or intermittent employees shall be deemed in compliance with respect to the requirements for a written program if the employer adopts the Model Program prepared by the Division and complies with the requirements set forth therein.

Note 2: Employers in the construction industry who are required to be licensed under Chapter 9 (commencing with Section 7000) of Division 3 or the Business and Professions Code may use records relating to employee training provided to the employer in connection with an occupational safety and health training program approved by the Division, and shall only be required to keep records of those steps taken to implement and maintain the program with respect to hazards specific to the employee's job duties.

(c) Employers who elect to use a labor/management safety and health committee to comply with the communication requirements of subsection (a)(3) of this section shall be presumed to be in substantial compliance with subsection (a)(3) if the committee:

(1) Meets regularly, but not less than quarterly;

**Title 8, Section 1509.
Construction Injury and Illness
Prevention Program.**

- (2) Prepares and makes available to the affected employees, written records of the safety and health issues discussed at committee meetings, and maintained for review by the Division upon request. The committee meeting records shall be maintained for one (1) year;
 - (3) Reviews results of the periodic, scheduled worksite inspections;
 - (4) Reviews investigations of occupational accidents and causes of incidents resulting in occupational injury, occupational illness, or exposure to hazardous substances and, where appropriate, submits suggestions to management for the prevention of future incidents;
 - (5) Review investigations of alleged hazardous conditions brought to the attention of any committee member. When determined necessary by the committee, the committee may conduct its own inspection and investigation to assist in remedial solutions;
 - (6) Submits recommendations to assist in the evaluation of employee safety suggestions; and
 - (7) Upon request from the Division verifies abatement action taken by the employer to abate citations issued by the Division.
- (a) Every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program in accordance with Section 3203 of the General Industry Safety Orders.
 - (b) Every employer shall adopt a written Code of Safety Practices which relates to the employer's operations. The Code shall contain language equivalent to the relevant parts of Plate A-3 of the Appendix contained within the Cal/OSHA Construction Safety Orders. (Note: General items are listed in Appendix C of this guide.)
 - (c) The Code of Safe Practices shall be posted at a conspicuous location at each job site office or be provided to each supervisory employee who shall have it readily available.
 - (d) Periodic meetings of supervisory employees shall be held under the direction of management for the discussion of safety problems and accidents that have occurred.
 - (e) Supervisory employees shall conduct "toolbox" or "tailgate" safety meetings, or equivalent, with their crews at least every 10 working days to emphasize safety.

Cal/OSHA Consultation Programs

Toll-free number: 1-800-963-9424 • Internet: www.dir.ca.gov

On-site Assistance Program Area Offices



Your call will in no way trigger an inspection by Cal/OSHA enforcement.

- **Voluntary Protection Program**

Oakland, CA 94612
(510) 622-1081

- **Research and Education Unit**

Sacramento, CA 95825
(916) 574-2528



1. CalOSHA Consultation Services

Who

Exactly Are We?

Cal/OSHA Consultation Service provides safety and health assistance to employers.



We are completely separate from Cal/OSHA Enforcement. Our professional staff helps companies prevent occupational injuries and illnesses.

How to reach us

Visit www.dir.ca.gov/dosh/consultation.html for a complete listing of our services.

Contact the nearest office:

Fresno	559-454-1295
Oakland	510-622-2891
Sacramento	916-263-0704
San Diego	619-767-2060
San Bernardino	909-383-4567
Santa Fe Springs	562-944-9366
San Fernando Valley	818-901-5754
Cal/VPP	510-622-1081

State wide: 800-963-9424



California Occupational Safety & Health



How Cal/OSHA Consultation Service can help with your Workplace Safety and Health needs

Frequently Asked Questions

What does an employer requested on-site Consultation Cost?

Nothing. **It's free** – your tax dollars at work!

Will Cal/OSHA Enforcement know we are working with Consultation?

No. We are completely separate programs. We do not share information with Cal/OSHA Enforcement.

Will you “OSHA proof” me?

No. We can't guarantee that Enforcement wouldn't find any violations. But better safety will make an inspection much less likely and less serious.

Will I be fined if you find hazards?

No. Consultation does not issue citations, fines or penalties.

What's the catch?

You'll have to fix any hazards we identify.



The benefits of an On-site Consultation

The more you know about your workplace hazards and how to correct them, the more effective your safety program.

Our consultants help by:

- Identifying and analyzing hazards
- Recommending best-practice solutions
- Helping you with your safety program
- Helping you strengthen your safety culture
- Providing training assistance

The Process...

Requesting Assistance

Call your local Consultation Service office and request an on-site visit. The request will be assigned to a consultant who will contact you to schedule a date and time.



Learning From Your Safety Record

The consultant will help identify hazards by analyzing your past injuries and illnesses. The focus will be on preventing future losses.

Program Review

The consultant will review all written safety programs, and assess how well they are being put into practice. You'll receive materials and guidance in setting-up an effective injury and illness prevention program.

Walk-Around Hazard Identification

The consultant will conduct a walk-around inspection and help you identify and correct unsafe conditions and work practices.

Closing Conference

At the end of the on-site visit. The consultant will summarize the findings and timeframes for correcting hazards with a written report to follow.

Preparing for the Visit

Have ready:

- Company safety programs
- Workers' compensation loss runs
- Cal/OSHA Form 300's

Opening Conference

The visit opens with a conference. For union companies, the representative should be present. Any employee participation is welcome. The consultant will explain the process, and management can decide whether to proceed.

Ask about Consultation's Partnership Programs



Call Now for your **FREE** visit

2. Hazard Assessment Checklist

HAZARD ASSESSMENT CHECKLIST



The following checklist can be used to identify and evaluate hazards in your workplace. This checklist covers a wide variety of workplace safety and health hazards. All of the topics covered in this checklist may not apply to your particular workplace. When evaluating your workplace use the sections of the checklist that apply to your workplace and work activities.

GENERAL WORK ENVIRONMENT

- Are all worksites clean and orderly?
- Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?
- Are all spilled materials or liquids cleaned up immediately?
- Is combustible scrap, debris and waste stored safely and removed from the worksite promptly?
- Is accumulated combustible dust routinely removed from elevated surfaces, including the overhead structure of buildings?
- Is combustible dust cleaned up with a vacuum system to prevent the dust going into suspension?
- Is metallic or conductive dust prevented from entering or accumulation on or around electrical enclosures or equipment?
- Are covered metal waste cans used for oily and paint-soaked waste?
- Are all oil and gas fired devices equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working?
- Are paint spray booths, dip tanks and the like cleaned regularly?
- Are the minimum number of toilets and washing facilities provided?
- Are all toilets and washing facilities clean and sanitary?
- Are all work areas adequately illuminated?
- Are pits and floor openings covered or otherwise guarded?

PERSONAL PROTECTIVE EQUIPMENT

- Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?
- Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?
- Are employees who need corrective lenses (glasses or contacts lenses) in working environments with harmful exposures, required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures?
- Are protective gloves, aprons, shields, or other means provided against cuts, corrosive liquids and chemicals?

- Are hard hats provided and worn where danger of falling objects exists?
- Are hard hats inspected periodically for damage to the shell and suspension system?
- Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions?
- Are approved respirators provided for regular or emergency use where needed?
- Is all protective equipment maintained in a sanitary condition and ready for use?
- Do you have eye wash facilities and a quick drench shower within the work area where employees are exposed to injurious corrosive materials?
- Where special equipment is needed for electrical workers, is it available?
- When lunches are eaten on the premises, are they eaten in areas where there is no exposure to toxic materials or other health hazards?
- Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the Cal/OSHA noise standard?

WALKWAYS

- Are aisles and passageways kept clear?
- Are aisles and walkways marked as appropriate?
- Are wet surfaces covered with non-slip materials?
- Are holes in the floor, sidewalk or other walking surface repaired properly, covered or otherwise made safe?
- Is there safe clearance for walking in aisles where motorized or mechanical handling equipment is operating.
- Are spilled materials cleaned up immediately?
- Are materials or equipment stored in such a way that sharp projectiles will not interfere with the walkway?
- Are changes of direction or elevations readily identifiable?
- Are aisles or walkways that pass near moving or operating machinery, welding operations or similar operations arranged so employees will not be subjected to potential hazards?
- Is adequate headroom provided for the entire length of any aisle or walkway?
- Are standard guardrails provided wherever aisle or walkway surfaces are elevated more than 30 inches above any adjacent floor or the ground?
- Are bridges provided over conveyors and similar hazards?

FLOOR AND WALL STAIRWAYS

- Are floor openings guarded by a cover, guardrail, or equivalent on all sides (except at entrance to stairways or ladders)?
- Are toeboards installed around the edges of a permanent floor opening (where persons may pass below the opening)?
- Are skylight screens of such construction and mounting that they will withstand a load of at least 200 pounds?
- Is the glass in windows, doors, glass walls that are subject to human impact, of sufficient thickness and type for the condition of use?
- Are grates or similar type covers over floor openings such as floor drains, of such design that foot traffic or rolling equipment will not be affected by the grate spacing?
- Are unused portions of service pits and pits not actually in use either covered or protected by guardrails or equivalent?
- Are manhole covers, trench covers and similar covers, plus their supports, designed to carry a truck rear axle load of at least 20,000 pounds when located in roadways and subject to vehicle traffic?
- Are floor or wall openings in fire resistive construction provided with doors or covers compatible with the fire rating of the structure and provided with self-closing feature when appropriate?

STAIRS & STAIRWAYS

- Are standard stair rails or handrails on all stairways having four or more risers?
- Are all stairways at least 22 inches wide?
- Do stairs have at least a 6'6" overhead clearance?
- Do stairs angle no more than 50 and no less than 30 degrees?
- Are stairs of hollow-pan type treads and landings filled to noising level with solid material?
- Are step risers on stairs uniform from top to bottom, with no riser spacing greater than 7-1/2 inches?
- Are steps on stairs and stairways designed or provided with a surface that renders them slip resistant?
- Are stairway handrails located between 30 and 34 inches above the leading edge of stair treads?
- Do stairway handrails have a least 1-1/2 inches of clearance between the handrails and the wall or surface they are mounted on?
- Are stairway handrails capable of withstanding a load of 200 pounds, applied in any direction?
- Where stairs or stairways exit directly into any area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Do stairway landings have a dimension measured in the direction of travel, at least equal to width of the stairway?
- Is the vertical distance between stairway landings limited to 12 feet or less?

ELEVATED SURFACES

- Are signs posted, when appropriate, showing the elevated surface load capacity?
- Are surfaces elevated more than 30 inches above the floor or ground provided with standard guardrails?
- Are all elevated surfaces (beneath which people or machinery could be exposed to falling objects) provided with standard 4-inch toeboards?
- Is a permanent means of access and egress provided to elevated storage and work surfaces?
- Is required headroom provided where necessary?
- Is material on elevated surfaces piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading?
- Are dock boards or bridge plates used when transferring materials between docks and trucks or rail cars?

EXITING OR EGRESS

- Are all exits marked with an exit sign and illuminated by a reliable light source?
- Are the directions to exits, when not immediately apparent, marked with visible signs?
- Are doors, passageways or stairways, that are neither exits nor access to exits and which could be mistaken for exits, appropriately marked "NOT AN EXIT", "TO BASEMENT", "STOREROOM", and the like?
- Are exit signs provided with the word "EXIT" in lettering at least 5 inches high and the stroke of the lettering at least 1/2 inch wide?
- Are exit doors side-hinged?
- Are all exits kept free of obstructions?
- Are at least two means of egress provided from elevated platforms, pits or rooms where the absence of a second exit would increase the risk of injury from hot, poisonous, corrosive, suffocating, flammable, or explosive substances?
- Are there sufficient exits to permit prompt escape in case of emergency?
- Are special precautions taken to protect employees during construction and repair operations?
- Is the number of exits from each floor of a building, and the number of exits from the building itself, appropriate for the building occupancy load?
- Are exit stairways which are required to be separated from other parts of a building enclosed by at least two hour fire-resistive construction in buildings more than four stories in height, and not less than one-hour fire resistive construction elsewhere?
- When ramps are used as part of required exiting from a building, is the ramp slope limited to 1-foot vertical and 12 feet horizontal?
- Where exiting will be through frameless glass doors, glass exit doors, storm doors, and such are the doors fully tempered and meet the safety requirements for human impact?

EXIT DOORS

- Are doors that are required to serve as exits designed and constructed so that the way of exit travel is obvious and direct?
- Are windows that could be mistaken for exit doors, made inaccessible by means of barriers or railings?
- Are exit doors openable from the direction of exit travel without the use of a key or any special knowledge or effort, when the building is occupied?
- Is a revolving, sliding or overhead door prohibited from serving as a required exit door?
- Where panic hardware is installed on a required exit door, will it allow the door to open by applying a force of 15 pounds or less in the direction of the exit traffic?
- Are doors on cold storage rooms provided with an inside release mechanism that will release the latch and open the door even if it's padlocked or otherwise locked on the outside?
- Where exit doors open directly onto any street, alley or other area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Are doors that swing in both directions and are located between rooms where there is frequent traffic, provided with viewing panels in each door?

PORTABLE LADDERS

- Are all ladders maintained in good condition, joints between steps and side rails tight, all hardware and fittings securely attached, and moveable parts operating freely without binding or undue play?
- Are non-slip safety feet provided on each ladder?
- Are non-slip safety feet provided on each metal or rung ladder?
- Are ladder rungs and steps free of grease and oil?
- Is it prohibited to place a ladder in front of doors opening toward the ladder except when the door is blocked open, locked or guarded?
- Is it prohibited to place ladders on boxes, barrels, or other unstable bases to obtain additional height?
- Are employees instructed to face the ladder when ascending or descending?
- Are employees prohibited from using ladders that are broken, missing steps, rungs, or cleats, broken side rails or other faulty equipment?
- Are employees instructed not to use the top 2 steps of ordinary stepladders as a step?
- When portable rung ladders are used to gain access to elevated platforms, roofs, and the like does the ladder always extend at least 3 feet above the elevated surface?
- Is it required that when portable rung or cleat type ladders are used the base is so placed that slipping will not occur, or it is lashed or otherwise held in place?
- Are portable metal ladders legibly marked with signs reading "CAUTION" "Do Not Use Around Electrical Equipment" or equivalent wording?
- Are employees prohibited from using ladders as guys, braces, skids, gin poles, or for other than their intended purposes?
- Are employees instructed to only adjust extension ladders while standing at a base (not while standing on the ladder or from a position above the ladder)?
- Are metal ladders inspected for damage?
- Are the rungs of ladders uniformly spaced at 12 inches, center to center?

HAND TOOLS & EQUIPMENT

- Are all tools and equipment (both, company and employee-owned) used by employees at their workplace in good condition?
- Are hand tools such as chisels, punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?
- Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?
- Are worn or bent wrenches replaced regularly?
- Are appropriate handles used on files and similar tools?
- Are employees made aware of the hazards caused by faulty or improperly used hand tools?
- Are appropriate safety glasses, face shields, and similar equipment used while using hand tools or equipment that might produce flying materials or be subject to breakage?
- Are jacks checked periodically to assure they are in good operating condition?
- Are tool handles wedged tightly in the head of all tools?
- Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?
- Are tools stored in dry, secure location where they won't be tampered with?
- Is eye and face protection used when driving hardened or tempered spuds or nails?

PORTABLE (POWER OPERATED) TOOLS & EQUIPMENT

- Are grinders, saws, and similar equipment provided with appropriate safety guards?
- Are power tools used with the correct shield, guard or attachment recommended by the manufacturer?
- Are portable circular saws equipped with guards above and below the base shoe?
- Are circular saw guards checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?
- Are rotating or moving parts of equipment guarded to prevent physical contact?

- Are all cord-connected, electrically operated tools and equipment effectively grounded or of the approved double insulated type?
- Are effective guards in place over belts, pulleys, chains, and sprockets, on equipment such as concrete mixers, air compressors, and the like?
- Are portable fans provided with full guards or screens having openings 1/2 inch or less?
- Is hoisting equipment available and used for lifting heavy objects, and are hoist ratings and characteristics appropriate for the task?
- Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?
- Are pneumatic and hydraulic hoses on power-operated tools checked regularly for deterioration or damage?

ABRASIVE WHEEL EQUIPMENT GRINDERS

- Is the work rest used and kept adjusted to within 1/8 inch of the wheel?
- Is the adjustable tongue on the top side of the grinder used and kept adjusted to within 1/4 inch of the wheel?
- Do side guards cover the spindle, nut, and flange and 75 percent of the wheel diameter?
- Are bench and pedestal grinders permanently mounted?
- Are goggles or face shields always worn when grinding?
- Is the maximum RPM rating of each abrasive wheel compatible with the RPM rating of the grinder motor?
- Are fixed or permanently mounted grinders connected to their electrical supply system with metallic conduit or other permanent wiring method?
- Does each grinder have an individual on and off control switch?
- Is each electrically operated grinder effectively grounded?
- Before new abrasive wheels are mounted, are they visually inspected and ring tested?
- Are dust collectors and powered exhausts provided on grinders used in operations that produce large amounts of dust?
- Are splashguards mounted on grinders that use coolant, to prevent the coolant reaching employees?
- Is cleanliness maintained around grinder?

POWDER ACTUATED TOOLS

- Are employees who operate powder-actuated tools trained in their use and carry a valid operator's card?
- Do the powder-actuated tools being used have written approval of the Division of Occupational Safety and Health?
- Is each powder-actuated tool stored in its own locked container when not being used?
- Is a sign at least 7" by 10" with bold type reading "POWDER-ACTUATED TOOL IN USE" conspicuously posted when the tool is being used?
- Are powder-actuated tools left unloaded until they are actually ready to be used?
- Are powder-actuated tools inspected for obstructions or defects each day before use?
- Do powder-actuated tools operators have and use appropriate personal protective equipment such as hard hats, safety goggles, safety shoes and ear protectors?

MACHINE GUARDING

- Is there a training program to instruct employees on safe methods of machine operation?
- Is there adequate supervision to ensure that employees are following safe machine operating procedures?
- Is there a regular program of safety inspection of machinery and equipment?
- Is all machinery and equipment kept clean and properly maintained?
- Is sufficient clearance provided around and between machines to allow for safe operations, set up and servicing, material handling and waste removal?
- Is equipment and machinery securely placed and anchored, when necessary to prevent tipping or other movement that could result in personal injury?
- Is there a power shut-off switch within reach of the operator's position at each machine?
- Can electric power to each machine be locked out for maintenance, repair, or security?

- Are the noncurrent-carrying metal parts of electrically operated machines bonded and grounded?
- Are foot-operated switches guarded or arranged to prevent accidental actuation by personnel or falling
- Are manually operated valves and switches controlling the operation of equipment and machines clearly identified and readily accessible?
- Are all emergency stop buttons colored red?
- Are all pulleys and belts that are within 7 feet of the floor or working level properly guarded?
- Are all moving chains and gears properly guarded?
- Are splashguards mounted on machines that use coolant, to prevent the coolant from reaching employees?
- Are methods provided to protect the operator and other employees in the machine area from hazards created at the point of operation, ingoing nip points, rotating parts, flying chips, and sparks?
- Are machinery guards secure and so arranged that they do not offer a hazard in their use?
- If special hand tools are used for placing and removing material, do they protect the operator's hands?
- Are revolving drums, barrels, and containers required to be guarded by an enclosure that is interlocked with the drive mechanism, so that revolution cannot occur unless the guard enclosure is in place, so guarded?
- Do arbors and mandrels have firm and secure bearings and are they free from play?
- Are provisions made to prevent machines from automatically starting when power is restored after a power failure or shutdown?
- Are machines constructed so as to be free from excessive vibration when the largest size tool is mounted and run at full speed?
- If machinery is cleaned with compressed air, is air pressure controlled and personal protective equipment or other safeguards used to protect operators and other workers from eye and body injury?
- Are fan blades protected with a guard having openings no larger than 1/2 inch, when operating within 7 feet of the floor?
- Are saws used for ripping, equipped with anti-kick back devices and spreaders?
- Are radial arm saws so arranged that the cutting head will gently return to the back of the table when released?

LOCKOUT BLOCKOUT PROCEDURES

- Is all machinery or equipment capable of movement, required to be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required?
- Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited?
- Are all equipment control valve handles provided with a means for locking-out?
- Does the lockout procedure require that stored energy (i.e. mechanical, hydraulic, air,) be released or blocked before equipment is locked-out for repairs?
- Are appropriate employees provided with individually keyed personal safety locks?
- Are employees required to keep personal control of their key(s) while they have safety locks in use?
- Is it required that employees check the safety of the lock out by attempting a start up after making sure no one is exposed?
- Where the power disconnecting means for equipment does not also disconnect the electrical control circuit:
- Are the appropriate electrical enclosures identified?
- Is means provide to assure the control circuit can also be disconnected and locked out?

WELDING, CUTTING & BRAZING

- Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?
- Do all operator have a copy of the appropriate operating instructions and are they directed to follow them?
- Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting, or leakage?
- Is care used in handling and storage of cylinders, safety valves, relief valves, and the like, to prevent damage?
- Are precautions taken to prevent the mixture of air or oxygen with flammable gases, except at a burner or in a standard torch?

- Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used?
- Are cylinders kept away from sources of heat?
- Is it prohibited to use cylinders as rollers or supports?
- Are empty cylinders appropriately marked their valves closed and valve-protection caps on?
- Are signs reading: DANGER NO-SMOKING, MATCHES, OR OPEN LIGHTS, or the equivalent posted?
- Are cylinders, cylinder valves, couplings, regulators, hoses, and apparatus keep free of oily or greasy substances?
- Is care taken not to drop or strike cylinders?
- Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders?
- Do cylinders without fixed hand wheels have keys, handles, or non-adjustable wrenches on stem valves when in service?
- Are liquefied gases stored and shipped valve-end up with valve covers in place?
- Are employees instructed to never crack a fuel-gas cylinder valve near sources of ignition?
- Before a regulator is removed, is the valve closed and gas released from the regulator?
- Is red used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose?
- Are pressure-reducing regulators used only for the gas and pressures for which they are intended?
- Is open circuit (No Load) voltage of arc welding and cutting machines as low as possible and not in excess of the recommended limits?
- Under wet conditions, are automatic controls for reducing no-load voltage used?
- Is grounding of the machine frame and safety ground connections of portable machines checked periodically?

- Are electrodes removed from the holders when not in use?
- Is it required that electric power to the welder be shut off when no one is in attendance?
- Is suitable fire extinguishing equipment available for immediate use?
- Is the welder forbidden to coil or loop welding electrode cable around his body?
- Are wet machines thoroughly dried and tested before being used?
- Are work and electrode lead cables frequently inspected for wear and damage, and replaced when needed?
- Do means for connecting cables' lengths have adequate insulation?
- When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, sparks, and slag?
- Are firewatchers assigned when welding or cutting is performed, in locations where a serious fire might develop?
- Are combustible floors kept wet, covered by damp sand, or protected by fire-resistant shields?
- When floors are wet down, are personnel protected from possible electrical shock?
- When welding is done on metal walls, are precautions taken to protect combustibles on the other side?
- Before hot work is begun, are used drums, barrels, tanks, and other containers so thoroughly cleaned that no substances remain that could explode, ignite, or produce toxic vapors?
- Is it required that eye protection helmets, hand shields and goggles meet appropriate standards?
- Are employees exposed to the hazards created by welding, cutting, or bracing operations protected with personal protective equipment and clothing?
- Is a check made for adequate ventilation in and where welding or cutting is performed?
- When working in confined places are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency?

COMPRESSORS & COMPRESSED AIR

- Are compressors equipped with pressure relief valves, and pressure gauges?
- Are compressor air intakes installed and equipped to ensure that only clean uncontaminated air enters the compressor?
- Are air filters installed on the compressor intake?

- Are compressors operated and lubricated in accordance with the manufacturer's recommendations?
- Are safety devices on compressed air systems checked frequently?
- Before any repair work is done on the pressure system of a compressor, is the pressure bled off and the system locked-out?
- Are signs posted to warn of the automatic starting feature of the compressors?
- Is the belt drive system totally enclosed to provide protection for the front, back, top, and sides?
- Is it strictly prohibited to direct compressed air towards a person?
- Are employees prohibited from using highly compressed air for cleaning purposes?
- If compressed air is used for cleaning off clothing, is the pressure reduced to less than 10 psi?
- When using compressed air for cleaning, do employees use personal protective equipment?
- Are safety chains or other suitable locking devices used at couplings of high pressure hose lines where a connection failure would create a hazard?
- Before compressed air is used to empty containers of liquid, is the safe working pressure of the container checked?
- When compressed air is used with abrasive blast cleaning equipment, is the operating valve a type that must be held open manually?
- When compressed air is used to inflate auto tires, is a clip-on chuck and an inline regulator preset to 40 psi required?
- Is it prohibited to use compressed air to clean up or move combustible dust if such action could cause the dust to be suspended in the air and cause a fire or explosion hazard?

COMPRESSED AIR RECEIVERS

- Is every receiver equipped with a pressure gauge and with one or more automatic, spring-loaded safety valves?
- Is the total relieving capacity of the safety valve capable of preventing pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent?
- Is every air receiver provided with a drainpipe and valve at the lowest point for the removal of accumulated oil and water?
- Are compressed air receivers periodically drained of moisture and oil?
- Are all safety valves tested frequently and at regular intervals to determine whether they are in good operating condition?
- Is there a current operating permit issued by the Division of Occupational Safety and Health?
- Is the inlet of air receivers and piping systems kept free of accumulated oil and carbonaceous materials?

COMPRESSED GAS & CYLINDERS

- Are cylinders with a water weight capacity over 30 pounds equipped with means for connecting a valve protector device, or with a collar or recess to protect the valve?
- Are cylinders legibly marked to clearly identify the gas contained?
- Are compressed gas cylinders stored in areas which are protected from external heat sources such as flame impingement, intense radiant heat, electric arcs, or high temperature lines?
- Are cylinders located or stored in areas where they will not be damaged by passing or falling objects, or subject to tampering by unauthorized persons?
- Are cylinders stored or transported in a manner to prevent them creating a hazard by tipping, falling or rolling?
- Are cylinders containing liquefied fuel gas, stored or transported in a position so that the safety relief device is always in direct contact with the vapor space in the cylinder?
- Are valve protectors always placed on cylinders when the cylinders are not in use or connected for use?
- Are all valves closed off before a cylinder is moved, when the cylinder is empty, and at the completion of each job?
- Are low pressure fuel-gas cylinders checked periodically for corrosion, general distortion, cracks, or any other defect that might indicate a weakness or render it unfit for service?
- Does the periodic check of low pressure fuel-gas cylinders include a close inspection of the cylinders' bottom?

HOIST & AUXILIARY EQUIPMENT

- Is each overhead electric hoist equipped with a limit device to stop the hook travel at its highest and lowest point of safe travel?
- Will each hoist automatically stop and hold any load up to 125 percent of its rated load, if its actuating force is removed?
- Is the rated load of each hoist legibly marked and visible to the operator?
- Are stops provided at the safe limits of travel for trolley hoist?
- Are the controls of hoists plainly marked to indicate the direction of travel or motion?
- Is each cage-controlled hoist equipped with an effective warning device?
- Are close-fitting guards or other suitable devices installed on hoist to assure hoist ropes will be maintained in the sheave groves?
- Are all hoist chains or ropes of sufficient length to handle the full range of movement for the application while still maintaining two full wraps on the drum at all times?
- Are nip points or contact points between hoist ropes and sheaves which are permanently located within 7 feet of the floor, ground or working platform, guarded?
- Is it prohibited to use chains or rope slings that are kinked or twisted?
- Is it prohibited to use the hoist rope or chain wrapped around the load as a substitute, for a sling?
- Is the operator instructed to avoid carrying loads over people?
- Are only employees who have been trained in the proper use of hoists allowed to operate them?

INDUSTRIAL TRUCKS - FORKLIFTS

- Are only trained personnel allowed to operate industrial trucks?
- Is substantial overhead protective equipment provided on high lift rider equipment?
- Are the required lift truck operating rules posted and enforced?
- Is directional lighting provided on each industrial truck that operates in an area with less than 2 foot candles per square foot of general lighting?
- Does each industrial truck have a warning horn, whistle, gong or other device which can be clearly heard above the normal noise in the areas where operated?
- Are the brakes on each industrial truck capable of bringing the vehicle to a complete and safe stop when fully loaded?
- Will the industrial truck's parking brake effectively prevent the vehicle from moving when unattended?
- Are industrial trucks operating in areas where flammable gases or vapors, or combustible dust or ignitable fibers may be present in the atmosphere, approved for such locations?
- Are motorized hand and hand/rider trucks so designed that the brakes are applied, and power to the drive motor shuts off when the operator releases his/her grip on the device that controls the travel?
- Are industrial trucks with internal combustion engine operated in buildings or enclosed areas, carefully checked to ensure such operations do not cause harmful concentration of dangerous gases or fumes?

SPRAYING OPERATIONS

- Is adequate ventilation assured before spray operations are started?
- Is mechanical ventilation provided when spraying operation is done in enclosed areas?
- When mechanical ventilation is provided during spraying operations, is it so arranged that it will not circulate the contaminated air?
- Is the spray area free of hot surfaces?
- Is the spray area at least 20 feet from flames, sparks, operating electrical motors and other ignition sources?
- Are portable lamps used to illuminate spray areas suitable for use in a hazardous location?
- Is approved respiratory equipment provided and used when appropriate during spraying operations?
- Do solvents used for cleaning have a flash point of 100E F or more?
- Are fire control sprinkler heads kept clean?

- Are "NO SMOKING" signs posted in spray areas, paint rooms, paint booths, and paint storage areas?
- Is the spray area kept clean of combustible residue?
- Are spray booths constructed of metal, masonry, or other substantial noncombustible material?
- Are spray booth floors and baffles noncombustible and easily cleaned?
- Is infrared drying apparatus kept out of the spray area during spraying operations?
- Is the spray booth completely ventilated before using the drying apparatus?
- Is the electric drying apparatus properly grounded?
- Are lighting fixtures for spray booths located outside of the booth and the interior lighted through sealed clear panels?
- Are the electric motors for exhaust fans placed outside booths or ducts?
- Are belts and pulleys inside the booth fully enclosed?
- Do ducts have access doors to allow cleaning?
- Do all drying spaces have adequate ventilation?

ENTERING CONFINED SPACES

- Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry?
- Before entry, are all lines to a confined space, containing inert, toxic, flammable, or corrosive materials valved off and blanked or disconnected and separated?
- Is it required that all impellers, agitators, or other moving equipment inside confined spaces be locked-out if they present a hazard?
- Is either natural or mechanical ventilation provided prior to confined space entry?
- Before entry, are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substance and explosive concentrations in the confined space before entry?
- Is adequate illumination provided for the work to be performed in the confined space?
- Is the atmosphere inside the confined space frequently tested or continuously monitor during conduct of work?

- Is there an assigned safety standby employee outside of the confined space, whose sole responsibility is to watch the work in progress, sound an alarm if necessary, and render assistance?
- Is the standby employee or other employees prohibited from entering the confined space without lifelines and respiratory equipment if there is any questions as to the cause of an emergency?
- In addition to the standby employee, is there at least one other trained rescuer in the vicinity?
- Are all rescuers appropriately trained and using approved, recently inspected equipment?
- Does all rescue equipment allow for lifting employees vertically from a top opening?
- Are there trained personnel in First Aid and CPR immediately available?
- Is there an effective communication system in place whenever respiratory equipment is used and the employee in the confined space is out of sight of the standby person?
- Is approved respiratory equipment required if the atmosphere inside the confined space cannot be made acceptable?
- Is all portable electrical equipment used inside confined spaces either grounded and insulated, or equipped with ground fault protection?
- Before gas welding or burning is started in a confined space, are hoses checked for leaks, compressed gas bottles forbidden inside of the confined space, torches lighted only outside of the confined area and the confined area tested for an explosive atmosphere each time before a lighted torch is to be taken into the confined space?
- If employees will be using oxygen-consuming equipment such as salamanders, torches, furnaces, in a confined space, is sufficient air provided to assure combustion without reducing the oxygen concentration of the atmosphere below 19.5 percent by volume?
- Whenever combustion-type equipment is used in confined space, are provisions made to ensure the exhaust gases are vented outside of the enclosure?
- Is each confined space checked for decaying vegetation or animal matter, which may produce methane?
- Is the confined space checked for possible industrial waste, which could contain toxic properties?

- If the confined space is below the ground and near areas where motor vehicles will be operating, is it possible for vehicle exhaust or carbon monoxide to enter the space?

ENVIRONMENTAL CONTROLS

- Are all work areas properly illuminated?
- Are employees instructed in proper first aid and other emergency procedures?
- Are hazardous substances identified which may cause harm by inhalation, ingestion, skin absorption or contact?
- Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, and caustics?
- Is employee exposure to chemicals in the workplace kept within acceptable levels?
- Can a less harmful method or product be used?
- Is the work area's ventilation system appropriate for the work being performed?
- Are spray painting operations done in spray rooms or booths equipped with an appropriate exhaust system?
- Is employee exposure to welding fumes controlled by ventilation, use of respirators, exposure time, or other means?
- Are welders and other workers nearby provided with flash shields during welding operations?
- If forklifts and other vehicles are used in buildings or other enclosed areas, are the carbon monoxide levels kept below maximum acceptable concentration?
- Has there been a determination that noise levels in the facilities are within acceptable levels?
- Are steps being taken to use engineering controls to reduce excessive noise levels?
- Are proper precautions being taken when handling asbestos and other fibrous materials?
- Are caution labels and signs used to warn of asbestos?
- Are wet methods used, when practicable, to prevent the emission of airborne asbestos fibers, silica dust and similar hazardous materials?
- Is vacuuming with appropriate equipment used whenever possible rather than blowing or sweeping dust?
- Are grinders, saws, and other machines that produce respirable dusts vented to an industrial collector or central exhaust system?
- Are all local exhaust ventilation systems designed and operating properly such as airflow and volume necessary for the application? Are the ducts free of obstructions or the belts slipping?
- Is personal protective equipment provided, used and maintained wherever required?
- Are there written standard operating procedures for the selection and use of respirators where needed?
- Are restrooms and washrooms kept clean and sanitary?
- Is all water provided for drinking, washing, and cooking potable?
- Are all outlets for water not suitable for drinking clearly identified?
- Are employees' physical capacities assessed before being assigned to jobs requiring heavy work?
- Are employees instructed in the proper manner of lifting heavy objects?
- Where heat is a problem, have all fixed work areas been provided with spot cooling or air conditioning?
- Are employees screened before assignment to areas of high heat to determine if their health condition might make them more susceptible to having an adverse reaction?
- Are employees working on streets and roadways where they are exposed to the hazards of traffic, required to wear bright colored (traffic orange) warning vest?
- Are exhaust stacks and air intakes located that contaminated air will not be recirculated within a building or other enclosed area?
- Is equipment producing ultra-violet radiation properly shielded?

FLAMMABLE & COMBUSTIBLE MATERIALS

- Are combustible scrap, debris and waste materials (i.e. oily rags) stored in covered metal receptacles and removed from the worksite promptly?
- Is proper storage practiced to minimize the risk of fire including spontaneous combustion?
- Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?

- Are all connections on drums and combustible liquid piping, vapor and liquid tight?
- Are all flammable liquids kept in closed containers when not in use (e.g. parts cleaning tanks, pans)?
- Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?
- Do storage rooms for flammable and combustible liquids have explosion-proof lights?
- Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?
- Is liquefied petroleum gas stored, handled, and used in accordance with safe practices and standards?
- Are liquefied petroleum storage tanks guarded to prevent damage from vehicles?
- Are all solvent wastes and flammable liquids kept in fire-resistant covered containers until they are removed from the worksite?
- Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?
- Are fire separators placed between containers of combustibles or flammables, when stacked one upon another, to assure their support and stability?
- Are fuel gas cylinders and oxygen cylinders separated by distance, fire resistant barriers or other means while in storage?
- Are fire extinguishers selected and provided for the types of materials in areas where they are to be used?
- Class A: Ordinary combustible material fires.
- Class B: Flammable liquid, gas or grease fires.
- Class C: Energized-electrical equipment fires.
- If a Halon 1301 fire extinguisher is used, can employees evacuate within the specified time for that extinguisher?
- Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials?
- Is the transfer/withdrawal of flammable or combustible liquids performed by trained personnel?
- Are fire extinguishers mounted so that employees do not have to travel more than 75 feet for a class "A" fire or 50 feet for a class "B" fire?
- Are employees trained in the use of fire extinguishers?
- Are extinguishers free from obstructions or blockage?
- Are all extinguishers serviced, maintained and tagged at intervals not to exceed one year?
- Are all extinguishers fully charged and in their designated places?
- Is a record maintained of required monthly checks of extinguishers?
- Where sprinkler systems are permanently installed, are the nozzle heads directed or arranged so that water will not be sprayed into operating electrical switchboards and equipment?
- Are "NO SMOKING" signs posted where appropriate in areas where flammable or combustible materials are used or stored?
- Are "NO SMOKING" signs posted on liquefied petroleum gas tanks?
- Are "NO SMOKING" rules enforced in areas involving storage and use of flammable materials?
- Are safety cans used for dispensing flammable or combustible liquids at a point of use?
- Are all spills of flammable or combustible liquids cleaned up promptly?
- Are storage tanks adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes?
- Are storage tanks equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure?
- Are spare portable or butane tanks, which are used by industrial trucks stored in accord with regulations?

FIRE PROTECTION

- Do you have a fire prevention plan?
- Does your plan describe the type of fire protection equipment and/or systems?
- Have you established practices and procedures to control potential fire hazards and ignition sources?
- Are employees aware of the fire hazards of the material and processes to which they are exposed?
- Is your local fire department well acquainted with your facilities, location and specific hazards?
- If you have a fire alarm system, is it tested at least annually?

- If you have a fire alarm system, is it certified as required?
- If you have interior standpipes and valves, are they inspected regularly?
- If you have outside private fire hydrants, are they flushed at least once a year and on a routine preventive maintenance schedule?
- Are fire doors and shutters in good operating condition?
- Are fire doors and shutters unobstructed and protected against obstructions, including their counterweights?
- Are fire door and shutter fusible links in place?
- Are automatic sprinkler system water control valves, air and water pressures checked weekly/periodically as required?
- Is maintenance of automatic sprinkler system assigned to responsible persons or to a sprinkler contractor?
- Are sprinkler heads protected by metal guards, when exposed to physical damage?
- Is proper clearance maintained below sprinkler heads?
- Are portable fire extinguishers provided in adequate number and type?
- Are fire extinguishers mounted in readily accessible locations?
- Are fire extinguishers recharged regularly and noted on the inspection tag?
- Are employees periodically instructed in the use of extinguishers and fire protection procedures?

HAZARDOUS CHEMICAL EXPOSURES

- Are employees trained in the safe handling practices of hazardous chemicals such as acids, caustics, and the like?
- Are employees aware of the potential hazards involving various chemicals stored or used in the workplace-- such as acids, bases, caustics, epoxies, and phenols?
- Is employee exposure to chemicals kept within acceptable levels?
- Are eye wash fountains and safety showers provided in areas where corrosive chemicals are handled?
- Are all containers, such as vats and storage tanks labeled as to their contents--e.g. "CAUSTICS"?
- Are all employees required to use personal protective clothing and equipment when handling chemicals (i.e. gloves, eye protection, and respirators)?
- Are flammable or toxic chemicals kept in closed containers when not in use?
- Are chemical piping systems clearly marked as to their content?
- Where corrosive liquids are frequently handled in open containers or drawn from storage vessels or pipelines, is adequate means readily available for neutralizing or disposing of spills or overflows properly and safely?
- Have standard operating procedures been established and are they being followed when cleaning up chemical spills?
- Where needed for emergency use, are respirators stored in a convenient, clean and sanitary location?
- Are respirators intended for emergency use adequate for the various uses for which they may be needed?
- Are employees prohibited from eating in areas where hazardous chemicals are present?
- Is personal protective equipment provided, used and maintained whenever necessary?
- Are there written standard operating procedures for the selection and use of respirators where needed?
- If you have a respirator protection program, are your employees instructed on the correct usage and limitations of the respirators?
- Are the respirators NIOSH approved for this particular application?
- Are they regularly inspected and cleaned sanitized and maintained?
- If hazardous substances are used in your processes, do you have a medical or biological monitoring system in operation?
- Are you familiar with the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents used in your workplace?
- Have control procedures been instituted for hazardous materials, where appropriate, such as respirators, ventilation systems, handling practices, and the like?
- Whenever possible, are hazardous substances handled in properly designed and exhausted booths or similar locations?
- Do you use general dilution or local exhaust ventilation systems to control dusts, vapors, gases, fumes, smoke, solvents or mists which may be generated in your workplace?

- Is ventilation equipment provided for removal of contaminants from such operations as production grinding, buffing, spray painting, and/or vapor decreasing, and is it operating properly?
- Do employees complain about dizziness, headaches, nausea, irritation, or other factors of discomfort when they use solvents or other chemicals?
- Is there a dermatitis problem--do employees complain about skin dryness, irritation, or sensitization?
- Have you considered the use of an industrial hygienist or environmental health specialist to evaluate your operation?
- If internal combustion engines are used, is carbon monoxide kept within acceptable levels?
- Is vacuuming used, rather than blowing or sweeping dusts whenever possible for clean up?
- Are materials, which give off toxic asphyxiant, suffocating or anesthetic fumes, stored in remote or isolated locations when not in use?

HAZARDOUS SUBSTANCES COMMUNICATION

- Is there a list of hazardous substances used in your workplace?
- Is there a written hazard communication program dealing with Material Safety Data Sheets (MSDS) labeling, and employee training?
- Who is responsible for MSDSs, container labeling, employee training?
- Is each container for a hazardous substance (i.e. vats, bottles, storage tanks,) labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)?
- Is there a Material Safety Data Sheet readily available for each hazardous substance used?
- How will you inform other employers whose employees share the same work area where the hazardous substances are used?
- Is there an employee training program for hazardous substances?
- Does this program include:
 - An explanation of what an MSDS is and how to use and obtain one?
 - MSDS contents for each hazardous substance or class of substances?
 - Explanation of "Right to Know"?
 - Identification of where employees can see the employer's written hazard communication program and where hazardous substances are present in their work area?
 - The physical and health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used?
 - Details of the hazard communication program, including how to use the labeling system and MSDSs?
 - How employees will be informed of hazards of non-routine tasks, and hazards of unlabeled pipes?

ELECTRICAL

- Are your workplace electricians familiar with the Cal/OSHA Electrical Safety Orders?
- Do you specify compliance with Cal/OSHA for all contract electrical work?
- Are all employees required to report as soon as practicable any obvious hazard to life or property observed in connection with electrical equipment or lines?
- Are employees instructed to make preliminary inspections and/or appropriate tests to determine what conditions exist before starting work on electrical equipment or lines?
- When electrical equipment or lines are to be serviced, maintained or adjusted, are necessary switches opened, locked-out and tagged whenever possible?
- Are portable electrical tools and equipment grounded or of the double insulated type?
- Are electrical appliances such as vacuum cleaners, polishers, vending machines grounded?
- Do extension cords being used have a grounding conductor?
- Are multiple plug adapters prohibited?
- Are ground-fault circuit interrupters installed on each temporary 15 or 20 ampere, 120 volt AC circuit at locations where construction, demolition, modifications, alterations or excavations are being performed?
- Are all temporary circuits protected by suitable disconnecting switches or plug connectors at the junction with permanent wiring?
- Is exposed wiring and cords with frayed or deteriorated insulation repaired or replaced promptly?

- Are flexible cords and cables free of splices or taps?
- Are clamps or other securing means provided on flexible cords or cables at plugs, receptacles, tools, and equipment and is the cord jacket securely held in place?
- Are all cord, cable and raceway connections intact and secure?
- In wet or damp locations, are electrical tools and equipment appropriate for the use or location or otherwise protected?
- Is the location of electrical power lines and cables (overhead, underground, underfloor, other side of walls) determined before digging, drilling or similar work is begun?
- Are metal measuring tapes, ropes, handlines or similar devices with metallic thread woven into the fabric prohibited where they could come in contact with energized parts of equipment or circuit conductors?
- Is the use of metal ladders prohibited in area where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or circuit conductors?
- Are all disconnecting switches and circuit breakers labeled to indicate their use or equipment served?
- Are disconnecting means always opened before fuses are replaced?
- Do all interior wiring systems include provisions for grounding metal parts of electrical raceways, equipment and enclosures?
- Are all electrical raceways and enclosures securely fastened in place?
- Are all energized parts of electrical circuits and equipment guarded against accidental contact by approved cabinets or enclosures?
- Is sufficient access and working space provided and maintained about all electrical equipment to permit ready and safe operations and maintenance?
- Are all unused openings (including conduit knockouts) in electrical enclosures and fittings closed with appropriate covers, plugs or plates?
- Are electrical enclosures such as switches, receptacles, junction boxes, etc., provided with tight-fitting covers or plates?
- Are disconnecting switches for electrical motors in excess of two horsepower, capable of opening the circuit when the motor is in a stalled condition, without exploding? (Switches must be horsepower rated equal to or in excess of the motor hp rating).
- Is low voltage protection provided in the control device of motors driving machines or equipment, which could cause probably injury from inadvertent starting?
- Is each motor disconnecting switch or circuit breaker located within sight of the motor control device?
- Is each motor located within sight of its controller or the controller disconnecting means capable of being locked in the open position or is a separate disconnecting means installed in the circuit within sight of the motor?
- Is the controller for each motor in excess of two horsepower, rated in horsepower equal to or in excess of the rating of the motor is serves?
- Are employees who regularly work on or around energized electrical equipment or lines instructed in the cardiopulmonary resuscitation (CPR) methods?
- Are employees prohibited from working alone on energized lines or equipment over 600 volts?

NOISE

- Are there areas in the workplace where continuous noise levels exceed 85 dBA? (To determine maximum allowable levels for intermittent or impact noise, see Title 8, Section 5097.)
- Are noise levels being measured using a sound level meter or an octave band analyzer and records being kept?
- Have you tried isolating noisy machinery from the rest of your operation?
- Have engineering controls been used to reduce excessive noise levels?
- Where engineering controls are determined not feasible, are administrative controls (i.e. worker rotation) being used to minimize individual employee exposure to noise?
- Is there an ongoing preventive health program to educate employees in safe levels of noise and exposure, effects of noise on their health, and use of personal protection?
- Is the training repeated annually for employees exposed to continuous noise above 85 dBA?
- Have work areas where noise levels make voice communication between employees difficult been identified and posted?

- Is approved hearing protective equipment (noise attenuating devices) available to every employee working in areas where continuous noise levels exceed 85 dBA?
- If you use ear protectors, are employees properly fitted and instructed in their use and care?
- Are employees exposed to continuous noise above 85 dBA given periodic audiometric testing to ensure that you have an effective hearing protection system?

FUELING

- Is it prohibited to fuel an internal combustion engine with a flammable liquid while the engine is running?
- Are fueling operations done in such a manner that likelihood of spillage will be minimal?
- When spillage occurs during fueling operations, is the spilled fuel cleaned up completely, evaporated, or other measures taken to control vapors before restarting the engine?
- Are fuel tank caps replaced and secured before starting the engine?
- In fueling operations is there always metal contact between the container and fuel tank?
- Are fueling hoses of a type designed to handle the specific type of fuel?
- Is it prohibited to handle or transfer gasoline in open containers?
- Are open lights, open flames, or sparking or arcing equipment prohibited near fueling or transfer of fuel operations?
- Is smoking prohibited in the vicinity of fueling operations?
- Are fueling operations prohibited in building or other enclosed areas that are not specifically ventilated for this purpose?
- Where fueling or transfer of fuel is done through a gravity flow system, are the nozzles of the self-closing type?

IDENTIFICATION OF PIPING SYSTEMS

- When nonpotable water is piped through a facility, are outlets or taps posted to alert employees that it is unsafe and not to be used for drinking, washing or other personal use?
- When hazardous substances are transported through above ground piping, is each pipeline identified at points where confusion could introduce hazards to employees?
- When pipelines are identified by color painting, are all visible parts of the line so identified?
- When pipelines are identified by color painted bands or tapes, are the bands or tapes located at reasonable intervals and at each outlet, valve or connection?
- When pipelines are identified by color, is the color code posted at all locations where confusion could introduce hazards to employees?
- When the contents of pipelines are identified by name or name abbreviation, is the information readily visible on the pipe near each valve or outlet?
- When pipelines carrying hazardous substances are identified by tags, are the tags constructed of durable materials, the message carried clearly and permanently distinguishable and are tags installed at each valve or outlet?
- When pipelines are heated by electricity, steam or other external source, are suitable warning signs or tags placed at unions, valves, or other serviceable parts of the system?

MATERIAL HANDLING

- Is there safe clearance for equipment through aisles and doorways?
- Are aiseways designated, permanently marked, and kept clear to allow unhindered passage?
- Are motorized vehicles and mechanized equipment inspected daily or prior to use?
- Are vehicles shut off and brakes set prior to loading or unloading?
- Are containers or combustibles or flammables, when stacked while being moved, always separated by dunnage sufficient to provide stability?
- Are dock boards (bridge plates) used when loading or unloading operations are taking place between vehicles and docks?
- Are trucks and trailers secured from movement during loading and unloading operations?

- Are dock plates and loading ramps constructed and maintained with sufficient strength to support imposed loading?
- Are hand trucks maintained in safe operating condition?
- Are chutes equipped with sideboards of sufficient height to prevent the materials being handled from falling off?
- Are chutes and gravity roller sections firmly placed or secured to prevent displacement?
- At the delivery end of rollers or chutes, are provisions made to brake the movement of the handled materials.

- Are pallets usually inspected before being loaded or moved?
- Are hooks with safety latches or other arrangements used when hoisting materials so that slings or load attachments won't accidentally slip off the hoist hooks?
- Are securing chains, ropes, chockers or slings adequate for the job to be performed?
- When hoisting material or equipment, are provisions made to assure no one will be passing under the suspended loads?
- Are Material Safety Data Sheets available to employees handling hazardous substances?

TRANSPORTING EMPLOYEES & MATERIALS

- Do employees who operate vehicles on public thoroughfares have valid operator's licenses?
- When seven or more employees are regularly transported in a van, bus or truck, is the operator's license appropriate for the class of vehicle being driven?
- Is each van, bus or truck used regularly to transport employees, equipped with an adequate number of seats?

- When employees are transported by truck, are provision provided to prevent their falling from the vehicle?
- Are vehicles used to transport employees, equipped with lamps, brakes, horns, mirrors, windshields and turn signals in good repair?
- Are transport vehicles provided with handrails, steps, stirrups or similar devices, so placed and arranged that employees can safely mount or dismount?
- Are employee transport vehicles equipped at all times with at least two reflective type flares?
- Is a full charged fire extinguisher, in good condition, with at least 4 B:C rating maintained in each employee transport vehicle?
- When cutting tools with sharp edges are carried in passenger compartments of employee transport vehicles, are they placed in closed boxes or containers which are secured in place?
- Are employees prohibited from riding on top of any load, which can shift, topple, or otherwise become unstable?

CONTROL OF HARMFUL SUBSTANCES BY VENTILATION

- Is the volume and velocity of air in each exhaust system sufficient to gather the dusts, fumes, mists, vapors or gases to be controlled, and to convey them to a suitable point of disposal?
- Are exhaust inlets, ducts and plenums designed, constructed, and supported to prevent collapse or failure of any part of the system?
- Are clean-out ports or doors provided at intervals not to exceed 12 feet in all horizontal runs of exhaust ducts?

- Where two or more different type of operations are being controlled through the same exhaust system, will the combination of substances being controlled, constitute a fire, explosion or chemical reaction hazard in the duct?
- Is adequate makeup air provided to areas where exhaust systems are operating?
- Is the intake for makeup air located so that only clean, fresh air, which is free of contaminates, will enter the work environment?
- Where two or more ventilation systems are serving a work area, is their operation such that one will not offset the functions of the other?

SANITIZING EQUIPMENT & CLOTHING

- Is personal protective clothing or equipment, that employees are required to wear or use, of a type capable of being easily cleaned and disinfected?
- Are employees prohibited from interchanging personal protective clothing or equipment, unless it has been properly cleaned?
- Are machines and equipment, which processes, handle or apply materials that could be injurious to employees, cleaned and/or decontaminated before being overhauled or placed in storage?
- Are employees prohibited from smoking or eating in any area where contaminants are present that could be injurious if ingested?
- When employees are required to change from street clothing into protective clothing, is a clean changeroom with separate storage facility for street and protective clothing provided?
- Are employees required to shower and wash their hair as soon as possible after a known contact has occurred with a carcinogen?
- When equipment, materials, or other items are taken into or removed from a carcinogen regulated area, is it done in a manner that will not contaminate non-regulated areas or the external environment?

TIRE INFLATION

- Where tires are mounted and/or inflated on drop center wheels is a safe practice procedure posted and enforced?
- Where tires are mounted and/or inflated on wheels with split rims and/or retainer rings is a safe practice procedure posted and enforced?
- Does each tire inflation hose have a clip-on chuck with at least 24 inches of hose between the chuck and an in-line hand valve and gauge?
- Does the tire inflation control valve automatically shut off the airflow when the valve is released?
- Is a tire restraining device such as a cage, rack or other effective means used while inflating tires mounted on split rims, or rims using retainer rings?
- Are employees strictly forbidden from taking a position directly over or in front of a tire while it's being inflated?

EMERGENCY ACTION PLAN

- Are you required to have an emergency action plan?
- Does the emergency action plan comply with requirements of T8CCR 3220(a)?
- Have emergency escape procedures and routes been developed and communicated to all employees?
- Do employees, who remain to operate critical plant operations before they evacuate, know the proper procedures?
- Is the employee alarm system that provides a warning for emergency action recognizable and perceptible above ambient conditions?
- Are alarm systems properly maintained and tested regularly?
- Is the emergency action plan reviewed and revised periodically?
- Do employees know their responsibilities:
- For reporting emergencies?
- During an emergency?
- For conducting rescue and medical duties?

INFECTION CONTROL

- Are employees potentially exposed to infectious agents in body fluids?
- Have occasions of potential occupational exposure been identified and documented?
- Has a training and information program been provided for employees exposed to or potentially exposed to blood and/or body fluids?
- Have infection control procedures been instituted where appropriate, such as ventilation, universal precautions, workplace practices, and personal protective equipment?
- Are employees aware of specific workplace practices to follow when appropriate? (Hand washing, handling sharp instruments, handling of laundry, disposal of contaminated materials, reusable equipment.)

- Is personal protective equipment provided to employees, and in all appropriate locations?
- Is the necessary equipment (i.e. mouthpieces, resuscitation bags, and other ventilation devices) provided for administering mouth-to-mouth resuscitation on potentially infected patients?
- Are facilities/equipment to comply with workplace practices available, such as hand-washing sinks, biohazard tags and labels, needle containers, detergents/disinfectants to clean up spills?
- Are all equipment and environmental and working surfaces cleaned and disinfected after contact with blood or potentially infectious materials?
- Is infectious waste placed in closable, leak proof containers, bags or puncture-resistant holders with proper labels?
- Has medical surveillance including HBV evaluation, antibody testing and vaccination been made available to potentially exposed employees?
- Training on universal precautions?
- Training on personal protective equipment?
- Training on workplace practices, which should include blood drawing, room cleaning, laundry handling, clean up of blood spills?
- Training on needlestick exposure/management?
- Hepatitis B vaccinations?

ERGONOMICS

- Can the work be performed without eyestrain or glare to the employees?
- Does the task require prolonged raising of the arms?
- Do the neck and shoulders have to be stooped to view the task?
- Are there pressure points on any parts of the body (wrists, forearms, back of thighs)?
- Can the work be done using the larger muscles of the body?
- Can the work be done without twisting or overly bending the lower back?
- Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks?
- Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- Are all pieces of furniture adjusted, positioned and arranged to minimize strain on all parts of the body?

VENTILATION FOR INDOOR AIR QUALITY

- Does your HVAC system provide at least the quantity of outdoor air required by the State Building Standards Code, Title 24, Part 2 at the time the building was constructed?
- Is the HVAC system inspected at least annually, and problems corrected?
- Are inspection records retained for at least 5 years?

CRANE CHECKLIST

- Are the cranes visually inspected for defective components prior to the beginning of any work shift?
- Are all electrically operated cranes effectively grounded?
- Is a crane preventive maintenance program established?
- Is the load chart clearly visible to the operator?
- Are operating controls clearly identified?
- Is a fire extinguisher provided at the operator's station?
- Is the rated capacity visibly marked on each crane?
- Is an audible warning device mounted on each crane?
- Is sufficient illumination provided for the operator to perform the work safely?
- Are cranes of such design, that the boom could fall over backward, equipped with boomstops?
- Does each crane have a certificate indicating that required testing and examinations have been performed?
- Are crane inspection and maintenance records maintained and available for inspection?

3. Injury Illness and Prevention Plans

4. Model Injury and Illness Prevention Plan for Non High Hazard Workplace

Workplace Injury & Illness Prevention Program



for
**non-high hazard
employers**



CS-1 revised October 2001 Cal/OSHA Consultation Service

State of California-Department of Industrial Relations- Division of Occupational Safety & Health

**MODEL
INJURY AND ILLNESS
PREVENTION PROGRAM
FOR
NON-HIGH HAZARD
EMPLOYERS**

ABOUT THIS MODEL PROGRAM

Every California employer must establish, implement and maintain a written Injury and Illness Prevention (IIP) Program and a copy must be maintained at each worksite or at a central worksite if the employer has non-fixed worksites. The requirements for establishing, implementing and maintaining an effective written Injury and Illness Prevention Program are contained in Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203) and consist of the following eight elements:

- Responsibility
- Compliance
- Communication
- Hazard Assessment
- Accident/Exposure Investigation
- Hazard Correction
- Training and Instruction
- Recordkeeping

This model program has been prepared for use by employers in industries which have been determined by Cal/OSHA to be non-high hazard. You are not required to use this program. However, any employer in an industry which has been determined by Cal/OSHA as being non-high hazard who adopts, posts, and implements this model program in good faith is not subject to assessment of a civil penalty for a first violation of T8 CCR 3203.

Proper use of this model program requires the IIP Program administrator of your establishment to carefully review the requirements for each of the eight IIP Program elements found in this model program, fill in the appropriate blank spaces and check those items that are applicable to your workplace. The recordkeeping section requires that the IIP Program administrator select and implement the category appropriate for your establishment. Sample forms for hazard assessment and correction, accident/exposure investigation, and worker training and instruction are provided with this model program.

This model program must be maintained by the employer in order to be effective.

RESPONSIBILITY

The Injury and Illness Prevention (IIP) Program administrator,

Program Administrator

has the authority and the responsibility for implementing and maintaining this IIP Program for

Establishment Name

Managers and supervisors are responsible for implementing and maintaining the IIP Program in their work areas and for answering worker questions about the IIP Program. A copy of this IIP Program is available from each manager and supervisor.

COMPLIANCE

All workers, including managers and supervisors, are responsible for complying with safe and healthful work practices. Our system of ensuring that all workers comply with these practices include one or more of the following checked practices:

- Informing workers of the provisions of our IIP Program.
- Evaluating the safety performance of all workers.
- Recognizing employees who perform safe and healthful work practices.
- Providing training to workers whose safety performance is deficient.
- Disciplining workers for failure to comply with safe and healthful work practices.

COMMUNICATION

All managers and supervisors are responsible for communicating with all workers about occupational safety and health in a form readily understandable by all workers. Our communication system encourages all workers to inform their managers and supervisors about workplace hazards without fear of reprisal.

Our communication system includes one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
- Review of our IIP Program.
- Training programs.
- Regularly scheduled safety meetings.
- Posted or distributed safety information.
- A system for workers to anonymously inform management about workplace hazards.
- Our establishment has less than ten employees and communicates with and instructs employees orally about general safe work practices and hazards unique to each employee's job assignment.

HAZARD ASSESSMENT

Periodic inspections to identify and evaluate workplace hazards shall be performed by a competent observer in the following areas of our workplace:

Periodic inspections are performed according to the following schedule:

1. When we initially established our IIP Program;
2. When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
3. When new, previously unidentified hazards are recognized;
4. When occupational injuries and illnesses occur; and
5. Whenever workplace conditions warrant an inspection.

ACCIDENT/EXPOSURE INVESTIGATIONS

Procedures for investigating workplace accidents and hazardous substance exposures include:

1. Interviewing injured workers and witnesses;
2. Examining the workplace for factors associated with the accident/exposure;
3. Determining the cause of the accident/exposure;
4. Taking corrective action to prevent the accident/exposure from reoccurring; and
5. Recording the findings and actions taken.

HAZARD CORRECTION

Unsafe or unhealthy work conditions, practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

1. When observed or discovered; and
2. When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers who are required to correct the hazardous condition shall be provided with the necessary protection.

TRAINING AND INSTRUCTION

All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction is provided:

1. When the IIP Program is first established;
2. To all new workers, except for construction workers who are provided training through a construction industry occupational safety and health training program approved by Cal/OSHA;
3. To all workers given new job assignments for which training has not previously provided;
4. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
5. Whenever the employer is made aware of a new or previously unrecognized hazard;
6. To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
7. To all workers with respect to hazards specific to each employee's job assignment.

General workplace safety and health practices include, but are not limited to, the following:

1. Implementation and maintenance of the IIP Program.
2. Emergency action and fire prevention plan.
3. Provisions for medical services and first aid including emergency procedures.
4. Prevention of musculoskeletal disorders, including proper lifting techniques.
5. Proper housekeeping, such as keeping stairways and aisles clear, work areas neat and orderly, and promptly cleaning up spills.
6. Prohibiting horseplay, scuffling, or other acts that tend to adversely influence safety.
7. Proper storage to prevent stacking goods in an unstable manner and storing goods against doors, exits, fire extinguishing equipment and electrical panels.
8. Proper reporting of hazards and accidents to supervisors.
9. Hazard communication, including worker awareness of potential chemical hazards, and proper labeling of containers.
10. Proper storage and handling of toxic and hazardous substances including prohibiting eating or storing food and beverages in areas where they can become contaminated.

RECORDKEEPING

We have checked one of the following categories as our recordkeeping policy.

_____ **Category 1. Our establishment has twenty or more workers or has a workers' compensation experience modification rate of greater than 1.1 and is not on a designated low hazard industry list. We have taken the following steps to implement and maintain our IIP Program:**

- 1. Records of hazard assessment inspections, including the person(s) conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form; and**
- 2. Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of training, and training providers. are recorded on a worker training and instruction form.**

Inspection records and training documentation will be maintained according to the following checked schedule:

_____ **For one year, except for training records of employees who have worked for less than one year which are provided to the employee upon termination of employment; or**

_____ **Since we have less than ten workers, including managers and supervisors, we only maintain inspection records until the hazard is corrected and only maintain a log of instructions to workers with respect to worker job assignments when they are first hired or assigned new duties.**

_____ **Category 2. Our establishment has fewer than twenty workers and is not on a designated high hazard industry list. We are also on a designated low hazard industry list or have a workers' compensation experience modification rate of 1.1 or less, and have taken the following steps to implement and maintain our IIP Program:**

- 1. Records of hazard assessment inspections; and**
- 2. Documentation of safety and health training for each worker.**

Inspection records and training documentation will be maintained according to the following checked schedule:

_____ **For one year, except for training records of employees who have worked for less than one year which are provided to the employee upon termination of employment; or**

_____ **Since we have less than ten workers, including managers and supervisors, we maintain inspection records only until the hazard is corrected and only maintain a log of instructions to workers with respect to worker job assignments when they are first hired or assigned new duties.**

_____ **Category 3. We are a local governmental entity (county, city, district, or and any public or quasi-public corporation or public agency) and we are not required to keep written records of the steps taken to implement and maintain our IIP Program.**

HAZARD ASSESSMENT AND CORRECTION RECORD

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

ACCIDENT/EXPOSURE INVESTIGATION REPORT

Date & Time of Accident:

Location:

Accident Description:

Employees Involved:

Preventive Action Recommendations:

Corrective Actions Taken:

Manager Responsible:

Date Completed:

HAZARD ASSESSMENT AND CORRECTION RECORD

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Cal/OSHA Consultation Programs

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On-site Assistance Program Area Offices



Your call will in no way trigger an inspection by Cal/OSHA enforcement.

- **Voluntary Protection Program**

San Francisco, CA 94142
(415) 703-5272

- **Research and Education Unit**

Sacramento, CA 95825
(916) 574-2528



5. Model Injury and Illness Prevention Plan for High Hazard Workplace

MODEL INJURY AND ILLNESS PREVENTION PROGRAM FOR HIGH HAZARD EMPLOYERS

ABOUT THIS MODEL PROGRAM

Every California employer must establish, implement and maintain a written Injury and Illness Prevention (IIP) Program and a copy must be maintained at each workplace or at a central worksite if the employer has non-fixed worksites. The requirements for establishing, implementing and maintaining an effective written injury and illness prevention program are contained in Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203) and consist of the following eight elements:

- Responsibility
- Compliance
- Communication
- Hazard Assessment
- Accident/Exposure Investigation
- Hazard Correction
- Training and Instruction
- Recordkeeping

This model program has been prepared for use by employers in industries, which have been determined by Cal/OSHA to be high hazard. You are not required to use this program. This model program was written for a broad spectrum of employers and it may not match your establishment's exact needs. However, it does provide the essential framework required for an Injury and Illness Prevention Program.

Proper use of this model program requires the IIP Program administrator of your establishment to carefully review the requirements for each of the eight IIP Program elements found in this model program, fill in the appropriate blank spaces and check those items that are applicable to your workplace. The recordkeeping section requires that the IIP Program administrator select and implement the category appropriate for your establishment. Sample forms for hazard assessment and correction, accident/exposure investigation, and worker training and instruction are provided with this model program.

This model program must be maintained by the employer in order to be effective.

INJURY AND ILLNESS PREVENTION PROGRAM

RESPONSIBILITY

The Injury and Illness Prevention Program (IIP Program) administrator,

Program Administrator

has the authority and responsibility for implementing the provisions of this program for

Establishment Name

All managers and supervisors are responsible for implementing and maintaining the IIP Program in their work areas and for answering worker questions about the IIP Program. A copy of this IIP Program is available from each manager and supervisor.

COMPLIANCE

Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment include:

- Informing workers of the provisions of our IIP Program;
 - Evaluating the safety performance of all workers;
 - Recognizing employees who perform safe and healthful work practices;
 - Providing training to workers whose safety performance is deficient;
 - Disciplining workers for failure to comply with safe and healthful work practices; and
 - The following practices: _____
-
-

COMMUNICATION

We recognize that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
 - Review of our IIP Program.
 - Workplace safety and health training programs.
 - Regularly scheduled safety meetings.
 - Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate.
 - Posted or distributed safety information.
 - A system for workers to anonymously inform management about workplace hazards.
 - Our establishment has less than ten employees and communicates with and instructs employees orally about general safe work practices and with respect to hazards unique to each employee's job assignment.
 - A labor/management safety and health committee that meets regularly, prepares written records of the safety and health committees meetings, reviews results of the periodic scheduled inspections, reviews investigations of accidents and exposures and makes suggestions to management for the prevention of future incidents, reviews investigations of alleged hazardous conditions, and submits recommendations to assist in the evaluation of employee safety suggestion.
 - Other: _____
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-

HAZARD ASSESSMENT

Periodic inspections to identify and evaluate workplace hazards shall be performed by the following competent observer(s) in the following areas of our workplace:

Competent Observer	Area

Periodic inspections are performed according to the following schedule:

- _____;
 Frequency (Daily, weekly, monthly, etc.)
- When we initially established our IIP Program;
- When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
- When new, previously unidentified hazards are recognized;
- When occupational injuries and illnesses occur;
- When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and
- Whenever workplace conditions warrant an inspection.

Periodic inspections consist of identification and evaluation of workplace hazards utilizing applicable sections of the attached Hazard Assessment Checklist and any other effective methods to identify and evaluate workplace hazards.

ACCIDENT/EXPOSURE INVESTIGATIONS

Procedures for investigating workplace accidents and hazardous substance exposures include:

- Visiting the accident scene as soon as possible;
- Interviewing injured workers and witnesses;
- Examining the workplace for factors associated with the accident/exposure;
- Determining the cause of the accident/exposure;
- Taking corrective action to prevent the accident/exposure from reoccurring; and
- Recording the findings and corrective actions taken.

HAZARD CORRECTION

Unsafe or unhealthy work conditions, practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

- When observed or discovered;
- When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and
- All such actions taken and dates they are completed shall be documented on the appropriate forms.

TRAINING AND INSTRUCTION

All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:

- When the IIP Program is first established;
- To all new workers, except for construction workers who are provided training through a Cal/OSHA approved construction industry occupational safety and health training program;
- To all workers given new job assignments for which training has not previously provided;
- Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
- Whenever the employer is made aware of a new or previously unrecognized hazard;
- To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
- To all workers with respect to hazards specific to each employee's job assignment.

Workplace safety and health practices for all industries include, but are not limited to, the following:

- Explanation of the employer's IIP Program, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.
- Use of appropriate clothing, including gloves, footwear, and personal protective equipment.
- Information about chemical hazards to which employees could be exposed and other hazard communication program information.
- Availability of toilet, hand-washing and drinking water facilities.
- Provisions for medical services and first aid including emergency procedures.

In addition, we provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

RECORDKEEPING

We have checked one of the following categories as our recordkeeping policy.

- Category 1. Our establishment is on a designated high hazard industry list. We have taken the following steps to implement and maintain our IIP Program:
 1. Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form; and
 2. Documentation of safety and health training for each worker, including the worker's name or other

identifier, training dates, type(s) of training, and training providers are recorded on a worker training and instruction form. We also include the records relating to worker training provided by a construction industry occupational safety and health program approved by Cal/OSHA.

Inspection records and training documentation will be maintained according to the following checked schedule:

- For one year, except for training records of employees who have worked for less than one year which are provided to the worker upon termination of employment; or
 - Since we have less than ten workers, including managers and supervisors, we maintain inspection records only until the hazard is corrected and only maintain a log of instructions to workers with respect to worker job assignments when they are first hired or assigned new duties.
- Category 2. We are a local governmental entity (any county, city, or district, and any public or quasi-public corporation or public agency therein) and we are not required to keep written records of the steps taken to implement and maintain our IIP Program.

LIST OF TRAINING SUBJECTS

We train our workers about the following checked training subjects:

- The employer's Code of Safe Practices.
- Confined spaces.
- Safe practices for operating any agricultural equipment.
- Good housekeeping, fire prevention, safe practices for operating any construction equipment.
- Safe procedures for cleaning, repairing, servicing and adjusting equipment and machinery.
- Safe access to working areas.
- Protection from falls.
- Electrical hazards, including working around high voltage lines.
- Crane operations.
- Trenching and excavation work.
- Proper use of powered tools.
- Guarding of belts and pulleys, gears and sprockets, and conveyor nip points.
- Machine, machine parts, and prime movers guarding.
- Lock-out/tag-out procedures.
- Materials handling.
- Chainsaw and other power tool operation.
- Tree falling/bucking procedures and precautions, including procedures for recognizing and working with hazard trees, snags, lodged trees, and unsafe weather conditions.
- Yarding operations, including skidding, running lines, unstable logs, rigging and communication.
- Landing and loading areas, including release of rigging, landing layout, moving vehicles and equipment, and log truck locating, loading and wrapping.
- Fall protection from elevated locations.
- Use of elevated platforms, including condors and scissor lifts.
- Safe use of explosives.
- Driver safety.
- Slips, falls, and back injuries.
- Ergonomic hazards, including proper lifting techniques and working on ladders or in a stooped posture for prolonged periods at one time.
- Personal protective equipment.
- Respiratory Equipment.
- Hazardous chemical exposures.
- Hazard communication.

- Physical hazards, such as heat/cold stress, noise, and ionizing and non-ionizing radiation.
 - Laboratory safety.
 - Bloodborne pathogens and other biological hazards.
 - Other job-specific hazards, such as _____
-
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-

HAZARD ASSESSMENT CHECKLIST

GENERAL WORK ENVIRONMENT

- Are all worksites clean and orderly?
- Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?
- Are all spilled materials or liquids cleaned up immediately?
- Is combustible scrap, debris and waste stored safely and removed from the worksite promptly?
- Is accumulated combustible dust routinely removed from elevated surfaces, including the overhead structure of buildings?
- Is combustible dust cleaned up with a vacuum system to prevent the dust going into suspension?
- Is metallic or conductive dust prevented from entering or accumulation on or around electrical enclosures or equipment?
- Are covered metal waste cans used for oily and paint-soaked waste?
- Are all oil and gas fired devices equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working?
- Are paint spray booths, dip tanks and the like cleaned regularly?
- Are the minimum number of toilets and washing facilities provided?
- Are all toilets and washing facilities clean and sanitary?
- Are all work areas adequately illuminated?
- Are pits and floor openings covered or otherwise guarded?

PERSONAL PROTECTIVE EQUIPMENT & CLOTHING

- Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?
- Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?
- Are employees who need corrective lenses (glasses or contacts lenses) in working environments with harmful exposures, required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures?
- Are protective gloves, aprons, shields, or other means provided against cuts, corrosive liquids and chemicals?
- Are hard hats provided and worn where danger of falling objects exists?
- Are hard hats inspected periodically for damage to the shell and suspension system?
- Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions?
- Are approved respirators provided for regular or emergency use where needed?
- Is all protective equipment maintained in a sanitary condition and ready for use?
- Do you have eye wash facilities and a quick drench shower within the work area where employees are exposed to injurious corrosive materials?
- Where special equipment is needed for electrical workers, is it available?
- When lunches are eaten on the premises, are they eaten in areas where there is no exposure to toxic

materials or other health hazards?

- Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the Cal/OSHA noise standard?

WALKWAYS

- Are aisles and passageways kept clear?
- Are aisles and walkways marked as appropriate?
- Are wet surfaces covered with non-slip materials?
- Are holes in the floor, sidewalk or other walking surface repaired properly, covered or otherwise made safe?
- Is there safe clearance for walking in aisles where motorized or mechanical handling equipment is operating.
- Are spilled materials cleaned up immediately?
- Are materials or equipment stored in such a way that sharp projectiles will not interfere with the walkway?
- Are changes of direction or elevations readily identifiable?
- Are aisles or walkways that pass near moving or operating machinery, welding operations or similar operations arranged so employees will not be subjected to potential hazards?
- Is adequate headroom provided for the entire length of any aisle or walkway?
- Are standard guardrails provided wherever aisle or walkway surfaces are elevated more than 30 inches above any adjacent floor or the ground?
- Are bridges provided over conveyors and similar hazards?

FLOOR & WALL OPENINGS

- Are floor openings guarded by a cover, guardrail, or equivalent on all sides (except at entrance to stairways or ladders)?
- Are toeboards installed around the edges of a permanent floor opening (where persons may pass below the opening)?
- Are skylight screens of such construction and mounting that they will withstand a load of at least 200 pounds?
- Is the glass in windows, doors, glass walls that are subject to human impact, of sufficient thickness and type for the condition of use?
- Are grates or similar type covers over floor openings such as floor drains, of such design that foot traffic or rolling equipment will not be affected by the grate spacing?
- Are unused portions of service pits and pits not actually in use either covered or protected by guardrails or equivalent?
- Are manhole covers, trench covers and similar covers, plus their supports, designed to carry a truck rear axle load of at least 20,000 pounds when located in roadways and subject to vehicle traffic?
- Are floor or wall openings in fire resistive construction provided with doors or covers compatible with the fire rating of the structure and provided with self-closing feature when appropriate?

STAIRS & STAIRWAYS

- Are standard stair rails or handrails on all stairways having four or more risers?
- Are all stairways at least 22 inches wide?
- Do stairs have at least a 6'6" overhead clearance?
- Do stairs angle no more than 50 and no less than 30 degrees?
- Are stairs of hollow-pan type treads and landings filled to noising level with solid material?
- Are step risers on stairs uniform from top to bottom, with no riser spacing greater than 7-1/2 inches?
- Are steps on stairs and stairways designed or provided with a surface that renders them slip resistant?
- Are stairway handrails located between 30 and 34 inches above the leading edge of stair treads?
- Do stairway handrails have a least 1-1/2 inches of clearance between the handrails and the wall or surface they are mounted on?

- Are stairway handrails capable of withstanding a load of 200 pounds, applied in any direction?
- Where stairs or stairways exit directly into any area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Do stairway landings have a dimension measured in the direction of travel, at least equal to width of the stairway?
- Is the vertical distance between stairway landings limited to 12 feet or less?

ELEVATED SURFACES

- Are signs posted, when appropriate, showing the elevated surface load capacity?
- Are surfaces elevated more than 30 inches above the floor or ground provided with standard guardrails?
- Are all elevated surfaces (beneath which people or machinery could be exposed to falling objects) provided with standard 4-inch toeboards?
- Is a permanent means of access and egress provided to elevated storage and work surfaces?
- Is required headroom provided where necessary?
- Is material on elevated surfaces piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading?
- Are dock boards or bridge plates used when transferring materials between docks and trucks or rail cars?

EXITING OR EGRESS

- Are all exits marked with an exit sign and illuminated by a reliable light source?
- Are the directions to exits, when not immediately apparent, marked with visible signs?
- Are doors, passageways or stairways, that are neither exits nor access to exits and which could be mistaken for exits, appropriately marked "NOT AN EXIT", "TO BASEMENT", "STOREROOM", and the like?
- Are exit signs provided with the word "EXIT" in lettering at least 5 inches high and the stroke of the lettering at least 1/2 inch wide?
- Are exit doors side-hinged?
- Are all exits kept free of obstructions?
- Are at least two means of egress provided from elevated platforms, pits or rooms where the absence of a second exit would increase the risk of injury from hot, poisonous, corrosive, suffocating, flammable, or explosive substances?
- Are there sufficient exits to permit prompt escape in case of emergency?
- Are special precautions taken to protect employees during construction and repair operations?
- Is the number of exits from each floor of a building, and the number of exits from the building itself, appropriate for the building occupancy load?
- Are exit stairways which are required to be separated from other parts of a building enclosed by at least two hour fire-resistive construction in buildings more than four stories in height, and not less than one-hour fire resistive construction elsewhere?
- When ramps are used as part of required exiting from a building, is the ramp slope limited to 1- foot vertical and 12 feet horizontal?
- Where exiting will be through frameless glass doors, glass exit doors, storm doors, and such are the doors fully tempered and meet the safety requirements for human impact?

EXIT DOORS

- Are doors that are required to serve as exits designed and constructed so that the way of exit travel is obvious and direct?
- Are windows that could be mistaken for exit doors, made inaccessible by means of barriers or railings?
- Are exit doors openable from the direction of exit travel without the use of a key or any special knowledge or effort, when the building is occupied?
- Is a revolving, sliding or overhead door prohibited from serving as a required exit door?
- Where panic hardware is installed on a required exit door, will it allow the door to open by applying a force of 15 pounds or less in the direction of the exit traffic?

- Are doors on cold storage rooms provided with an inside release mechanism that will release the latch and open the door even if it's padlocked or otherwise locked on the outside?
- Where exit doors open directly onto any street, alley or other area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Are doors that swing in both directions and are located between rooms where there is frequent traffic, provided with viewing panels in each door?

PORTABLE LADDERS

- Are all ladders maintained in good condition, joints between steps and side rails tight, all hardware and fittings securely attached, and moveable parts operating freely without binding or undue play?
- Are non-slip safety feet provided on each ladder?
- Are non-slip safety feet provided on each metal or rung ladder?
- Are ladder rungs and steps free of grease and oil?
- Is it prohibited to place a ladder in front of doors opening toward the ladder except when the door is blocked open, locked or guarded?
- Is it prohibited to place ladders on boxes, barrels, or other unstable bases to obtain additional height?
- Are employees instructed to face the ladder when ascending or descending?
- Are employees prohibited from using ladders that are broken, missing steps, rungs, or cleats, broken side rails or other faulty equipment?
- Are employees instructed not to use the top 2 steps of ordinary stepladders as a step?
- When portable rung ladders are used to gain access to elevated platforms, roofs, and the like does the ladder always extend at least 3 feet above the elevated surface?
- Is it required that when portable rung or cleat type ladders are used the base is so placed that slipping will not occur, or it is lashed or otherwise held in place?
- Are portable metal ladders legibly marked with signs reading "CAUTION" "Do Not Use Around Electrical Equipment" or equivalent wording?
- Are employees prohibited from using ladders as guys, braces, skids, gin poles, or for other than their intended purposes?
- Are employees instructed to only adjust extension ladders while standing at a base (not while standing on the ladder or from a position above the ladder)?
- Are metal ladders inspected for damage?
- Are the rungs of ladders uniformly spaced at 12 inches, center to center?

HAND TOOLS & EQUIPMENT

- Are all tools and equipment (both, company and employee-owned) used by employees at their workplace in good condition?
- Are hand tools such as chisels, punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?
- Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?
- Are worn or bent wrenches replaced regularly?
- Are appropriate handles used on files and similar tools?
- Are employees made aware of the hazards caused by faulty or improperly used hand tools?
- Are appropriate safety glasses, face shields, and similar equipment used while using hand tools or equipment that might produce flying materials or be subject to breakage?
- Are jacks checked periodically to assure they are in good operating condition?
- Are tool handles wedged tightly in the head of all tools?
- Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?
- Are tools stored in dry, secure location where they won't be tampered with?
- Is eye and face protection used when driving hardened or tempered spuds or nails?

PORTABLE (POWER OPERATED) TOOLS & EQUIPMENT

- Are grinders, saws, and similar equipment provided with appropriate safety guards?
- Are power tools used with the correct shield, guard or attachment recommended by the manufacturer?
- Are portable circular saws equipped with guards above and below the base shoe?
- Are circular saw guards checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?
- Are rotating or moving parts of equipment guarded to prevent physical contact?
- Are all cord-connected, electrically operated tools and equipment effectively grounded or of the approved double insulated type?
- Are effective guards in place over belts, pulleys, chains, and sprockets, on equipment such as concrete mixers, air compressors, and the like?
- Are portable fans provided with full guards or screens having openings 1/2 inch or less?
- Is hoisting equipment available and used for lifting heavy objects, and are hoist ratings and characteristics appropriate for the task?
- Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?
- Are pneumatic and hydraulic hoses on power-operated tools checked regularly for deterioration or damage?

ABRASIVE WHEEL EQUIPMENT GRINDERS

- Is the work rest used and kept adjusted to within 1/8 inch of the wheel?
- Is the adjustable tongue on the top side of the grinder used and kept adjusted to within 1/4 inch of the wheel?
- Do side guards cover the spindle, nut, and flange and 75 percent of the wheel diameter?
- Are bench and pedestal grinders permanently mounted?
- Are goggles or face shields always worn when grinding?
- Is the maximum RPM rating of each abrasive wheel compatible with the RPM rating of the grinder motor?
- Are fixed or permanently mounted grinders connected to their electrical supply system with metallic conduit or other permanent wiring method?
- Does each grinder have an individual on and off control switch?
- Is each electrically operated grinder effectively grounded?
- Before new abrasive wheels are mounted, are they visually inspected and ring tested?
- Are dust collectors and powered exhausts provided on grinders used in operations that produce large amounts of dust?
- Are splashguards mounted on grinders that use coolant, to prevent the coolant reaching employees?
- Is cleanliness maintained around grinder?

POWDER ACTUATED TOOLS

- Are employees who operate powder-actuated tools trained in their use and carry a valid operator's card?
- Do the powder-actuated tools being used have written approval of the Division of Occupational Safety and Health?
- Is each powder-actuated tool stored in its own locked container when not being used?
- Is a sign at least 7" by 10" with bold type reading "POWDER-ACTUATED TOOL IN USE" conspicuously posted when the tool is being used?
- Are powder-actuated tools left unloaded until they are actually ready to be used?
- Are powder-actuated tools inspected for obstructions or defects each day before use?
- Do powder-actuated tools operators have and use appropriate personal protective equipment such as hard hats, safety goggles, safety shoes and ear protectors?

MACHINE GUARDING

- Is there a training program to instruct employees on safe methods of machine operation?
- Is there adequate supervision to ensure that employees are following safe machine operating procedures?
- Is there a regular program of safety inspection of machinery and equipment?

- Is all machinery and equipment kept clean and properly maintained?
- Is sufficient clearance provided around and between machines to allow for safe operations, set up and servicing, material handling and waste removal?
- Is equipment and machinery securely placed and anchored, when necessary to prevent tipping or other movement that could result in personal injury?
- Is there a power shut-off switch within reach of the operator's position at each machine?
- Can electric power to each machine be locked out for maintenance, repair, or security?
- Are the noncurrent-carrying metal parts of electrically operated machines bonded and grounded?
- Are foot-operated switches guarded or arranged to prevent accidental actuation by personnel or falling objects?
- Are manually operated valves and switches controlling the operation of equipment and machines clearly identified and readily accessible?
- Are all emergency stop buttons colored red?
- Are all pulleys and belts that are within 7 feet of the floor or working level properly guarded?
- Are all moving chains and gears properly guarded?
- Are splashguards mounted on machines that use coolant, to prevent the coolant from reaching employees?
- Are methods provided to protect the operator and other employees in the machine area from hazards created at the point of operation, ingoing nip points, rotating parts, flying chips, and sparks?
- Are machinery guards secure and so arranged that they do not offer a hazard in their use?
- If special hand tools are used for placing and removing material, do they protect the operator's hands?
- Are revolving drums, barrels, and containers required to be guarded by an enclosure that is interlocked with the drive mechanism, so that revolution cannot occur unless the guard enclosure is in place, so guarded?
- Do arbors and mandrels have firm and secure bearings and are they free from play?
- Are provisions made to prevent machines from automatically starting when power is restored after a power failure or shutdown?
- Are machines constructed so as to be free from excessive vibration when the largest size tool is mounted and run at full speed?
- If machinery is cleaned with compressed air, is air pressure controlled and personal protective equipment or other safeguards used to protect operators and other workers from eye and body injury?
- Are fan blades protected with a guard having openings no larger than 1/2 inch, when operating within 7 feet of the floor?
- Are saws used for ripping, equipped with anti-kick back devices and spreaders?
- Are radial arm saws so arranged that the cutting head will gently return to the back of the table when released?

LOCKOUT BLOCKOUT PROCEDURES

- is all machinery or equipment capable of movement, required to be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required?
- Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited?
- Are all equipment control valve handles provided with a means for locking-out?
- Does the lockout procedure require that stored energy (i.e. mechanical, hydraulic, air,) be released or blocked before equipment is locked-out for repairs?
- Are appropriate employees provided with individually keyed personal safety locks?
- Are employees required to keep personal control of their key(s) while they have safety locks in use?
- Is it required that employees check the safety of the lock out by attempting a start up after making sure no one is exposed?
- Where the power disconnecting means for equipment does not also disconnect the electrical control circuit:
- Are the appropriate electrical enclosures identified?
- Is means provide to assure the control circuit can also be disconnected and locked out?

WELDING, CUTTING & BRAZING

- Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?

- Do all operators have a copy of the appropriate operating instructions and are they directed to follow them?
- Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting, or leakage?
- Is care used in handling and storage of cylinders, safety valves, relief valves, and the like, to prevent damage?
- Are precautions taken to prevent the mixture of air or oxygen with flammable gases, except at a burner or in a standard torch?
- Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used?
- Are cylinders kept away from sources of heat?
- Is it prohibited to use cylinders as rollers or supports?
- Are empty cylinders appropriately marked their valves closed and valve-protection caps on?
- Are signs reading: DANGER NO-SMOKING, MATCHES, OR OPEN LIGHTS, or the equivalent posted?
- Are cylinders, cylinder valves, couplings, regulators, hoses, and apparatus kept free of oily or greasy substances?
- Is care taken not to drop or strike cylinders?
- Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders?
- Do cylinders without fixed hand wheels have keys, handles, or non-adjustable wrenches on stem valves when in service?
- Are liquefied gases stored and shipped valve-end up with valve covers in place?
- Are employees instructed to never crack a fuel-gas cylinder valve near sources of ignition?
- Before a regulator is removed, is the valve closed and gas released from the regulator?
- Is red used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose?
- Are pressure-reducing regulators used only for the gas and pressures for which they are intended?
- Is open circuit (No Load) voltage of arc welding and cutting machines as low as possible and not in excess of the recommended limits?
- Under wet conditions, are automatic controls for reducing no-load voltage used?
- Is grounding of the machine frame and safety ground connections of portable machines checked periodically?
- Are electrodes removed from the holders when not in use?
- Is it required that electric power to the welder be shut off when no one is in attendance?
- Is suitable fire extinguishing equipment available for immediate use?
- Is the welder forbidden to coil or loop welding electrode cable around his body?
- Are wet machines thoroughly dried and tested before being used?
- Are work and electrode lead cables frequently inspected for wear and damage, and replaced when needed?
- Do means for connecting cables' lengths have adequate insulation?
- When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, sparks, and slag?
- Are firewatchers assigned when welding or cutting is performed, in locations where a serious fire might develop?
- Are combustible floors kept wet, covered by damp sand, or protected by fire-resistant shields?
- When floors are wet down, are personnel protected from possible electrical shock?
- When welding is done on metal walls, are precautions taken to protect combustibles on the other side?
- Before hot work is begun, are used drums, barrels, tanks, and other containers so thoroughly cleaned that no substances remain that could explode, ignite, or produce toxic vapors?
- Is it required that eye protection helmets, hand shields and goggles meet appropriate standards?
- Are employees exposed to the hazards created by welding, cutting, or bracing operations protected with personal protective equipment and clothing?
- Is a check made for adequate ventilation in and where welding or cutting is performed?
- When working in confined places are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency?

COMPRESSORS & COMPRESSED AIR

- Are compressors equipped with pressure relief valves, and pressure gauges?
- Are compressor air intakes installed and equipped to ensure that only clean uncontaminated air enters the compressor?
- Are air filters installed on the compressor intake?
- Are compressors operated and lubricated in accordance with the manufacturer's recommendations?
- Are safety devices on compressed air systems checked frequently?
- Before any repair work is done on the pressure system of a compressor, is the pressure bled off and the system locked-out?
- Are signs posted to warn of the automatic starting feature of the compressors?
- Is the belt drive system totally enclosed to provide protection for the front, back, top, and sides?
- Is it strictly prohibited to direct compressed air towards a person?
- Are employees prohibited from using highly compressed air for cleaning purposes?
- If compressed air is used for cleaning off clothing, is the pressure reduced to less than 10 psi?
- When using compressed air for cleaning, do employees use personal protective equipment?
- Are safety chains or other suitable locking devices used at couplings of high pressure hose lines where a connection failure would create a hazard?
- Before compressed air is used to empty containers of liquid, is the safe working pressure of the container checked?
- When compressed air is used with abrasive blast cleaning equipment, is the operating valve a type that must be held open manually?
- When compressed air is used to inflate auto tires, is a clip-on chuck and an inline regulator preset to 40 psi required?
- Is it prohibited to use compressed air to clean up or move combustible dust if such action could cause the dust to be suspended in the air and cause a fire or explosion hazard?

COMPRESSED AIR RECEIVERS

- Is every receiver equipped with a pressure gauge and with one or more automatic, spring-loaded safety valves?
- Is the total relieving capacity of the safety valve capable of preventing pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent?
- Is every air receiver provided with a drainpipe and valve at the lowest point for the removal of accumulated oil and water?
- Are compressed air receivers periodically drained of moisture and oil?
- Are all safety valves tested frequently and at regular intervals to determine whether they are in good operating condition?
- Is there a current operating permit issued by the Division of Occupational Safety and Health?
- Is the inlet of air receivers and piping systems kept free of accumulated oil and carbonaceous materials?

COMPRESSED GAS & CYLINDERS

- Are cylinders with a water weight capacity over 30 pounds equipped with means for connecting a valve protector device, or with a collar or recess to protect the valve?
- Are cylinders legibly marked to clearly identify the gas contained?
- Are compressed gas cylinders stored in areas which are protected from external heat sources such as flame impingement, intense radiant heat, electric arcs, or high temperature lines?
- Are cylinders located or stored in areas where they will not be damaged by passing or falling objects, or subject to tampering by unauthorized persons?
- Are cylinders stored or transported in a manner to prevent them creating a hazard by tipping, falling or rolling?
- Are cylinders containing liquefied fuel gas, stored or transported in a position so that the safety relief device is always in direct contact with the vapor space in the cylinder?

- Are valve protectors always placed on cylinders when the cylinders are not in use or connected for use?
- Are all valves closed off before a cylinder is moved, when the cylinder is empty, and at the completion of each job?
- Are low pressure fuel-gas cylinders checked periodically for corrosion, general distortion, cracks, or any other defect that might indicate a weakness or render it unfit for service?
- Does the periodic check of low pressure fuel-gas cylinders include a close inspection of the cylinders' bottom?

HOIST & AUXILIARY EQUIPMENT

- Is each overhead electric hoist equipped with a limit device to stop the hook travel at its highest and lowest point of safe travel?
- Will each hoist automatically stop and hold any load up to 125 percent of its rated load, if its actuating force is removed?
- Is the rated load of each hoist legibly marked and visible to the operator?
- Are stops provided at the safe limits of travel for trolley hoist?
- Are the controls of hoists plainly marked to indicate the direction of travel or motion?
- Is each cage-controlled hoist equipped with an effective warning device?
- Are close-fitting guards or other suitable devices installed on hoist to assure hoist ropes will be maintained in the sheave grooves?
- Are all hoist chains or ropes of sufficient length to handle the full range of movement for the application while still maintaining two full wraps on the drum at all times?
- Are nip points or contact points between hoist ropes and sheaves which are permanently located within 7 feet of the floor, ground or working platform, guarded?
- Is it prohibited to use chains or rope slings that are kinked or twisted?
- Is it prohibited to use the hoist rope or chain wrapped around the load as a substitute, for a sling?
- Is the operator instructed to avoid carrying loads over people?
- Are only employees who have been trained in the proper use of hoists allowed to operate them?

INDUSTRIAL TRUCKS - FORKLIFTS

- Are only trained personnel allowed to operate industrial trucks?
- Is substantial overhead protective equipment provided on high lift rider equipment?
- Are the required lift truck operating rules posted and enforced?
- Is directional lighting provided on each industrial truck that operates in an area with less than 2 foot candles per square foot of general lighting?
- Does each industrial truck have a warning horn, whistle, gong or other device which can be clearly heard above the normal noise in the areas where operated?
- Are the brakes on each industrial truck capable of bringing the vehicle to a complete and safe stop when fully loaded?
- Will the industrial truck's parking brake effectively prevent the vehicle from moving when unattended?
- Are industrial trucks operating in areas where flammable gases or vapors, or combustible dust or ignitable fibers may be present in the atmosphere, approved for such locations?
- Are motorized hand and hand/rider trucks so designed that the brakes are applied, and power to the drive motor shuts off when the operator releases his/her grip on the device that controls the travel?
- Are industrial trucks with internal combustion engine operated in buildings or enclosed areas, carefully checked to ensure such operations do not cause harmful concentration of dangerous gases or fumes?

SPRAYING OPERATIONS

- Is adequate ventilation assured before spray operations are started?
- Is mechanical ventilation provided when spraying operation is done in enclosed areas?
- When mechanical ventilation is provided during spraying operations, is it so arranged that it will not circulate the contaminated air?

- Is the spray area free of hot surfaces?
- Is the spray area at least 20 feet from flames, sparks, operating electrical motors and other ignition sources?
- Are portable lamps used to illuminate spray areas suitable for use in a hazardous location?
- Is approved respiratory equipment provided and used when appropriate during spraying operations?
- Do solvents used for cleaning have a flash point of 100E F or more?
- Are fire control sprinkler heads kept clean?
- Are "NO SMOKING" signs posted in spray areas, paint rooms, paint booths, and paint storage areas?
- Is the spray area kept clean of combustible residue?
- Are spray booths constructed of metal, masonry, or other substantial noncombustible material?
- Are spray booth floors and baffles noncombustible and easily cleaned?
- Is infrared drying apparatus kept out of the spray area during spraying operations?
- Is the spray booth completely ventilated before using the drying apparatus?
- Is the electric drying apparatus properly grounded?
- Are lighting fixtures for spray booths located outside of the booth and the interior lighted through sealed clear panels?
- Are the electric motors for exhaust fans placed outside booths or ducts?
- Are belts and pulleys inside the booth fully enclosed?
- Do ducts have access doors to allow cleaning?
- Do all drying spaces have adequate ventilation?

ENTERING CONFINED SPACES

- Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry?
- Before entry, are all lines to a confined space, containing inert, toxic, flammable, or corrosive materials valved off and blanked or disconnected and separated?
- Is it required that all impellers, agitators, or other moving equipment inside confined spaces be locked-out if they present a hazard?
- Is either natural or mechanical ventilation provided prior to confined space entry?
- Before entry, are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substance and explosive concentrations in the confined space before entry?
- Is adequate illumination provided for the work to be performed in the confined space?
- Is the atmosphere inside the confined space frequently tested or continuously monitor during conduct of work?
- Is there an assigned safety standby employee outside of the confined space, whose sole responsibility is to watch the work in progress, sound an alarm if necessary, and render assistance?
- Is the standby employee or other employees prohibited from entering the confined space without lifelines and respiratory equipment if there is any questions as to the cause of an emergency?
- In addition to the standby employee, is there at least one other trained rescuer in the vicinity?
- Are all rescuers appropriately trained and using approved, recently inspected equipment?
- Does all rescue equipment allow for lifting employees vertically from a top opening?
- Are there trained personnel in First Aid and CPR immediately available?
- Is there an effective communication system in place whenever respiratory equipment is used and the employee in the confined space is out of sight of the standby person?
- Is approved respiratory equipment required if the atmosphere inside the confined space cannot be made acceptable?
- Is all portable electrical equipment used inside confined spaces either grounded and insulated, or equipped with ground fault protection?
- Before gas welding or burning is started in a confined space, are hoses checked for leaks, compressed gas bottles forbidden inside of the confined space, torches lighted only outside of the confined area and the confined area tested for an explosive atmosphere each time before a lighted torch is to be taken into the confined space?
- If employees will be using oxygen-consuming equipment such as salamanders, torches, furnaces, in a

confined space, is sufficient air provided to assure combustion without reducing the oxygen concentration of the atmosphere below 19.5 percent by volume?

- Whenever combustion-type equipment is used in confined space, are provisions made to ensure the exhaust gases are vented outside of the enclosure?
- Is each confined space checked for decaying vegetation or animal matter, which may produce methane?
- Is the confined space checked for possible industrial waste, which could contain toxic properties?
- If the confined space is below the ground and near areas where motor vehicles will be operating, is it possible for vehicle exhaust or carbon monoxide to enter the space?

ENVIRONMENTAL CONTROLS

- Are all work areas properly illuminated?
- Are employees instructed in proper first aid and other emergency procedures?
- Are hazardous substances identified which may cause harm by inhalation, ingestion, skin absorption or contact?
- Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, and caustics?
- Is employee exposure to chemicals in the workplace kept within acceptable levels?
- Can a less harmful method or product be used?
- Is the work area's ventilation system appropriate for the work being performed?
- Are spray painting operations done in spray rooms or booths equipped with an appropriate exhaust system?
- Is employee exposure to welding fumes controlled by ventilation, use of respirators, exposure time, or other means?
- Are welders and other workers nearby provided with flash shields during welding operations?
- If forklifts and other vehicles are used in buildings or other enclosed areas, are the carbon monoxide levels kept below maximum acceptable concentration?
- Has there been a determination that noise levels in the facilities are within acceptable levels?
- Are steps being taken to use engineering controls to reduce excessive noise levels?
- Are proper precautions being taken when handling asbestos and other fibrous materials?
- Are caution labels and signs used to warn of asbestos?
- Are wet methods used, when practicable, to prevent the emission of airborne asbestos fibers, silica dust and similar hazardous materials?
- Is vacuuming with appropriate equipment used whenever possible rather than blowing or sweeping dust?
- Are grinders, saws, and other machines that produce respirable dusts vented to an industrial collector or central exhaust system?
- Are all local exhaust ventilation systems designed and operating properly such as airflow and volume necessary for the application? Are the ducts free of obstructions or the belts slipping?
- Is personal protective equipment provided, used and maintained wherever required?
- Are there written standard operating procedures for the selection and use of respirators where needed?
- Are restrooms and washrooms kept clean and sanitary?
- Is all water provided for drinking, washing, and cooking potable?
- Are all outlets for water not suitable for drinking clearly identified?
- Are employees' physical capacities assessed before being assigned to jobs requiring heavy work?
- Are employees instructed in the proper manner of lifting heavy objects?
- Where heat is a problem, have all fixed work areas been provided with spot cooling or air conditioning?
- Are employees screened before assignment to areas of high heat to determine if their health condition might make them more susceptible to having an adverse reaction?
- Are employees working on streets and roadways where they are exposed to the hazards of traffic, required to wear bright colored (traffic orange) warning vest?
- Are exhaust stacks and air intakes located that contaminated air will not be recirculated within a building or other enclosed area?
- Is equipment producing ultra-violet radiation properly shielded?

FLAMMABLE & COMBUSTIBLE MATERIALS

- Are combustible scrap, debris and waste materials (i.e. oily rags) stored in covered metal receptacles and removed from the worksite promptly?
- Is proper storage practiced to minimize the risk of fire including spontaneous combustion?
- Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?
- Are all connections on drums and combustible liquid piping, vapor and liquid tight?
- Are all flammable liquids kept in closed containers when not in use (e.g. parts cleaning tanks, pans)?
- Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?
- Do storage rooms for flammable and combustible liquids have explosion-proof lights?
- Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?
- Is liquefied petroleum gas stored, handled, and used in accordance with safe practices and standards?
- Are liquefied petroleum storage tanks guarded to prevent damage from vehicles?
- Are all solvent wastes and flammable liquids kept in fire-resistant covered containers until they are removed from the worksite?
- Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?
- Are fire separators placed between containers of combustibles or flammables, when stacked one upon another, to assure their support and stability?
- Are fuel gas cylinders and oxygen cylinders separated by distance, fire resistant barriers or other means while in storage?
- Are fire extinguishers selected and provided for the types of materials in areas where they are to be used?
- Class A: Ordinary combustible material fires.
- Class B: Flammable liquid, gas or grease fires.
- Class C: Energized-electrical equipment fires.
- If a Halon 1301 fire extinguisher is used, can employees evacuate within the specified time for that extinguisher?
- Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials?
- Is the transfer/withdrawal of flammable or combustible liquids performed by trained personnel?
- Are fire extinguishers mounted so that employees do not have to travel more than 75 feet for a class "A" fire or 50 feet for a class "B" fire?
- Are employees trained in the use of fire extinguishers?
- Are extinguishers free from obstructions or blockage?
- Are all extinguishers serviced, maintained and tagged at intervals not to exceed one year?
- Are all extinguishers fully charged and in their designated places?
- Is a record maintained of required monthly checks of extinguishers?
- Where sprinkler systems are permanently installed, are the nozzle heads directed or arranged so that water will not be sprayed into operating electrical switchboards and equipment?
- Are "NO SMOKING" signs posted where appropriate in areas where flammable or combustible materials are used or stored?
- Are "NO SMOKING" signs posted on liquefied petroleum gas tanks?
- Are "NO SMOKING" rules enforced in areas involving storage and use of flammable materials?
- Are safety cans used for dispensing flammable or combustible liquids at a point of use?
- Are all spills of flammable or combustible liquids cleaned up promptly?
- Are storage tanks adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes?
- Are storage tanks equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure?
- Are spare portable or butane tanks, which are used by industrial trucks stored in accord with regulations?

FIRE PROTECTION

- Do you have a fire prevention plan?
- Does your plan describe the type of fire protection equipment and/or systems?
- Have you established practices and procedures to control potential fire hazards and ignition sources?

- Are employees aware of the fire hazards of the material and processes to which they are exposed?
- Is your local fire department well acquainted with your facilities, location and specific hazards?
- If you have a fire alarm system, is it tested at least annually?
- If you have a fire alarm system, is it certified as required?
- If you have interior standpipes and valves, are they inspected regularly?
- If you have outside private fire hydrants, are they flushed at least once a year and on a routine preventive maintenance schedule?
- Are fire doors and shutters in good operating condition?
- Are fire doors and shutters unobstructed and protected against obstructions, including their counterweights?
- Are fire door and shutter fusible links in place?
- Are automatic sprinkler system water control valves, air and water pressures checked weekly/periodically as required?
- Is maintenance of automatic sprinkler system assigned to responsible persons or to a sprinkler contractor?
- Are sprinkler heads protected by metal guards, when exposed to physical damage?
- Is proper clearance maintained below sprinkler heads?
- Are portable fire extinguishers provided in adequate number and type?
- Are fire extinguishers mounted in readily accessible locations?
- Are fire extinguishers recharged regularly and noted on the inspection tag?
- Are employees periodically instructed in the use of extinguishers and fire protection procedures?

HAZARDOUS CHEMICAL EXPOSURES

- Are employees trained in the safe handling practices of hazardous chemicals such as acids, caustics, and the like?
- Are employees aware of the potential hazards involving various chemicals stored or used in the workplace--such as acids, bases, caustics, epoxies, and phenols?
- Is employee exposure to chemicals kept within acceptable levels?
- Are eye wash fountains and safety showers provided in areas where corrosive chemicals are handled?
- Are all containers, such as vats and storage tanks labeled as to their contents--e.g. "CAUSTICS"?
- Are all employees required to use personal protective clothing and equipment when handling chemicals (i.e. gloves, eye protection, and respirators)?
- Are flammable or toxic chemicals kept in closed containers when not in use?
- Are chemical piping systems clearly marked as to their content?
- Where corrosive liquids are frequently handled in open containers or drawn from storage vessels or pipelines, is adequate means readily available for neutralizing or disposing of spills or overflows properly and safely?
- Have standard operating procedures been established and are they being followed when cleaning up chemical spills?
- Where needed for emergency use, are respirators stored in a convenient, clean and sanitary location?
- Are respirators intended for emergency use adequate for the various uses for which they may be needed?
- Are employees prohibited from eating in areas where hazardous chemicals are present?
- Is personal protective equipment provided, used and maintained whenever necessary?
- Are there written standard operating procedures for the selection and use of respirators where needed?
- If you have a respirator protection program, are your employees instructed on the correct usage and limitations of the respirators?
- Are the respirators NIOSH approved for this particular application?
- Are they regularly inspected and cleaned sanitized and maintained?
- If hazardous substances are used in your processes, do you have a medical or biological monitoring system in operation?
- Are you familiar with the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents used in your workplace?
- Have control procedures been instituted for hazardous materials, where appropriate, such as respirators, ventilation systems, handling practices, and the like?

- Whenever possible, are hazardous substances handled in properly designed and exhausted booths or similar locations?
- Do you use general dilution or local exhaust ventilation systems to control dusts, vapors, gases, fumes, smoke, solvents or mists which may be generated in your workplace?
- Is ventilation equipment provided for removal of contaminants from such operations as production grinding, buffing, spray painting, and/or vapor decreasing, and is it operating properly?
- Do employees complain about dizziness, headaches, nausea, irritation, or other factors of discomfort when they use solvents or other chemicals?
- Is there a dermatitis problem--do employees complain about skin dryness, irritation, or sensitization?
- Have you considered the use of an industrial hygienist or environmental health specialist to evaluate your operation?
- If internal combustion engines are used, is carbon monoxide kept within acceptable levels?
- Is vacuuming used, rather than blowing or sweeping dusts whenever possible for clean up?
- Are materials, which give off toxic asphyxiant, suffocating or anesthetic fumes, stored in remote or isolated locations when not in use?

HAZARDOUS SUBSTANCES COMMUNICATION

- Is there a list of hazardous substances used in your workplace?
- Is there a written hazard communication program dealing with Material Safety Data Sheets (MSDS) labeling, and employee training?
- Who is responsible for MSDSs, container labeling, employee training?
- Is each container for a hazardous substance (i.e. vats, bottles, storage tanks,) labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)?
- Is there a Material Safety Data Sheet readily available for each hazardous substance used?
- How will you inform other employers whose employees share the same work area where the hazardous substances are used?
- Is there an employee training program for hazardous substances?
- Does this program include:
 - An explanation of what an MSDS is and how to use and obtain one?
 - MSDS contents for each hazardous substance or class of substances?
 - Explanation of "Right to Know"?
- Identification of where employees can see the employer's written hazard communication program and where hazardous substances are present in their work area?
- The physical and health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used?
- Details of the hazard communication program, including how to use the labeling system and MSDSs?
- How employees will be informed of hazards of non-routine tasks, and hazards of unlabeled pipes?

ELECTRICAL

- Are your workplace electricians familiar with the Cal/OSHA Electrical Safety Orders?
- Do you specify compliance with Cal/OSHA for all contract electrical work?
- Are all employees required to report as soon as practicable any obvious hazard to life or property observed in connection with electrical equipment or lines?
- Are employees instructed to make preliminary inspections and/or appropriate tests to determine what conditions exist before starting work on electrical equipment or lines?
- When electrical equipment or lines are to be serviced, maintained or adjusted, are necessary switches opened, locked-out and tagged whenever possible?
- Are portable electrical tools and equipment grounded or of the double insulated type?
- Are electrical appliances such as vacuum cleaners, polishers, vending machines grounded?
- Do extension cords being used have a grounding conductor?
- Are multiple plug adapters prohibited?
- Are ground-fault circuit interrupters installed on each temporary 15 or 20 ampere, 120 volt AC circuit at

- locations where construction, demolition, modifications, alterations or excavations are being performed?
- Are all temporary circuits protected by suitable disconnecting switches or plug connectors at the junction with permanent wiring?
 - Is exposed wiring and cords with frayed or deteriorated insulation repaired or replaced promptly?
 - Are flexible cords and cables free of splices or taps?
 - Are clamps or other securing means provided on flexible cords or cables at plugs, receptacles, tools, and equipment and is the cord jacket securely held in place?
 - Are all cord, cable and raceway connections intact and secure?
 - In wet or damp locations, are electrical tools and equipment appropriate for the use or location or otherwise protected?
 - Is the location of electrical power lines and cables (overhead, underground, underfloor, other side of walls) determined before digging, drilling or similar work is begun?
 - Are metal measuring tapes, ropes, handlines or similar devices with metallic thread woven into the fabric prohibited where they could come in contact with energized parts of equipment or circuit conductors?
 - Is the use of metal ladders prohibited in area where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or circuit conductors?
 - Are all disconnecting switches and circuit breakers labeled to indicate their use or equipment served?
 - Are disconnecting means always opened before fuses are replaced?
 - Do all interior wiring systems include provisions for grounding metal parts of electrical raceways, equipment and enclosures?
 - Are all electrical raceways and enclosures securely fastened in place?
 - Are all energized parts of electrical circuits and equipment guarded against accidental contact by approved cabinets or enclosures?
 - Is sufficient access and working space provided and maintained about all electrical equipment to permit ready and safe operations and maintenance?
 - Are all unused openings (including conduit knockouts) in electrical enclosures and fittings closed with appropriate covers, plugs or plates?
 - Are electrical enclosures such as switches, receptacles, junction boxes, etc., provided with tight-fitting covers or plates?
 - Are disconnecting switches for electrical motors in excess of two horsepower, capable of opening the circuit when the motor is in a stalled condition, without exploding? (Switches must be horsepower rated equal to or in excess of the motor hp rating).
 - Is low voltage protection provided in the control device of motors driving machines or equipment, which could cause probably injury from inadvertent starting?
 - Is each motor disconnecting switch or circuit breaker located within sight of the motor control device?
 - Is each motor located within sight of its controller or the controller disconnecting means capable of being locked in the open position or is a separate disconnecting means installed in the circuit within sight of the motor?
 - Is the controller for each motor in excess of two horsepower, rated in horsepower equal to or in excess of the rating of the motor it serves?
 - Are employees who regularly work on or around energized electrical equipment or lines instructed in the cardiopulmonary resuscitation (CPR) methods?
 - Are employees prohibited from working alone on energized lines or equipment over 600 volts?

NOISE

- Are there areas in the workplace where continuous noise levels exceed 85 dBA? (To determine maximum allowable levels for intermittent or impact noise, see Title 8, Section 5097.)
- Are noise levels being measured using a sound level meter or an octave band analyzer and records being kept?
- Have you tried isolating noisy machinery from the rest of your operation?
- Have engineering controls been used to reduce excessive noise levels?
- Where engineering controls are determined not feasible, are administrative controls (i.e. worker rotation)

being used to minimize individual employee exposure to noise?

- Is there an ongoing preventive health program to educate employees in safe levels of noise and exposure, effects of noise on their health, and use of personal protection?
- Is the training repeated annually for employees exposed to continuous noise above 85 dBA?
- Have work areas where noise levels make voice communication between employees difficult been identified and posted?
- Is approved hearing protective equipment (noise attenuating devices) available to every employee working in areas where continuous noise levels exceed 85 dBA?
- If you use ear protectors, are employees properly fitted and instructed in their use and care?
- Are employees exposed to continuous noise above 85 dBA given periodic audiometric testing to ensure that you have an effective hearing protection system?

FUELING

- Is it prohibited to fuel an internal combustion engine with a flammable liquid while the engine is running?
- Are fueling operations done in such a manner that likelihood of spillage will be minimal?
- When spillage occurs during fueling operations, is the spilled fuel cleaned up completely, evaporated, or other measures taken to control vapors before restarting the engine?
- Are fuel tank caps replaced and secured before starting the engine?
- In fueling operations is there always metal contact between the container and fuel tank?
- Are fueling hoses of a type designed to handle the specific type of fuel?
- Is it prohibited to handle or transfer gasoline in open containers?
- Are open lights, open flames, or sparking or arcing equipment prohibited near fueling or transfer of fuel operations?
- Is smoking prohibited in the vicinity of fueling operations?
- Are fueling operations prohibited in building or other enclosed areas that are not specifically ventilated for this purpose?
- Where fueling or transfer of fuel is done through a gravity flow system, are the nozzles of the self-closing type?

IDENTIFICATION OF PIPING SYSTEMS

- When nonpotable water is piped through a facility, are outlets or taps posted to alert employees that it is unsafe and not to be used for drinking, washing or other personal use?
- When hazardous substances are transported through above ground piping, is each pipeline identified at points where confusion could introduce hazards to employees?
- When pipelines are identified by color painting, are all visible parts of the line so identified?
- When pipelines are identified by color painted bands or tapes, are the bands or tapes located at reasonable intervals and at each outlet, valve or connection?
- When pipelines are identified by color, is the color code posted at all locations where confusion could introduce hazards to employees?
- When the contents of pipelines are identified by name or name abbreviation, is the information readily visible on the pipe near each valve or outlet?
- When pipelines carrying hazardous substances are identified by tags, are the tags constructed of durable materials, the message carried clearly and permanently distinguishable and are tags installed at each valve or outlet?
- When pipelines are heated by electricity, steam or other external source, are suitable warning signs or tags placed at unions, valves, or other serviceable parts of the system?

MATERIAL HANDLING

- Is there safe clearance for equipment through aisles and doorways?
- Are aiseways designated, permanently marked, and kept clear to allow unhindered passage?
- Are motorized vehicles and mechanized equipment inspected daily or prior to use?

- Are vehicles shut off and brakes set prior to loading or unloading?
- Are containers or combustibles or flammables, when stacked while being moved, always separated by dunnage sufficient to provide stability?
- Are dock boards (bridge plates) used when loading or unloading operations are taking place between vehicles and docks?
- Are trucks and trailers secured from movement during loading and unloading operations?
- Are dock plates and loading ramps constructed and maintained with sufficient strength to support imposed loading?
- Are hand trucks maintained in safe operating condition?
- Are chutes equipped with sideboards of sufficient height to prevent the materials being handled from falling off?
- Are chutes and gravity roller sections firmly placed or secured to prevent displacement?
- At the delivery end of rollers or chutes, are provisions made to brake the movement of the handled materials.
- Are pallets usually inspected before being loaded or moved?
- Are hooks with safety latches or other arrangements used when hoisting materials so that slings or load attachments won't accidentally slip off the hoist hooks?
- Are securing chains, ropes, chockers or slings adequate for the job to be performed?
- When hoisting material or equipment, are provisions made to assure no one will be passing under the suspended loads?
- Are Material Safety Data Sheets available to employees handling hazardous substances?

TRANSPORTING EMPLOYEES & MATERIALS

- Do employees who operate vehicles on public thoroughfares have valid operator's licenses?
- When seven or more employees are regularly transported in a van, bus or truck, is the operator's license appropriate for the class of vehicle being driven?
- Is each van, bus or truck used regularly to transport employees, equipped with an adequate number of seats?
- When employees are transported by truck, are provision provided to prevent their falling from the vehicle?
- Are vehicles used to transport employees, equipped with lamps, brakes, horns, mirrors, windshields and turn signals in good repair?
- Are transport vehicles provided with handrails, steps, stirrups or similar devices, so placed and arranged that employees can safely mount or dismount?
- Are employee transport vehicles equipped at all times with at least two reflective type flares?
- Is a full charged fire extinguisher, in good condition, with at least 4 B:C rating maintained in each employee transport vehicle?
- When cutting tools with sharp edges are carried in passenger compartments of employee transport vehicles, are they placed in closed boxes or containers which are secured in place?
- Are employees prohibited from riding on top of any load, which can shift, topple, or otherwise become unstable?

CONTROL OF HARMFUL SUBSTANCES BY VENTILATION

- Is the volume and velocity of air in each exhaust system sufficient to gather the dusts, fumes, mists, vapors or gases to be controlled, and to convey them to a suitable point of disposal?
- Are exhaust inlets, ducts and plenums designed, constructed, and supported to prevent collapse or failure of any part of the system?
- Are clean-out ports or doors provided at intervals not to exceed 12 feet in all horizontal runs of exhaust ducts?
- Where two or more different type of operations are being controlled through the same exhaust system, will the combination of substances being controlled, constitute a fire, explosion or chemical reaction hazard in the duct?
- Is adequate makeup air provided to areas where exhaust systems are operating?

- Is the intake for makeup air located so that only clean, fresh air, which is free of contaminants, will enter the work environment?
- Where two or more ventilation systems are serving a work area, is their operation such that one will not offset the functions of the other?

SANITIZING EQUIPMENT & CLOTHING

- Is personal protective clothing or equipment, that employees are required to wear or use, of a type capable of being easily cleaned and disinfected?
- Are employees prohibited from interchanging personal protective clothing or equipment, unless it has been properly cleaned?
- Are machines and equipment, which processes, handle or apply materials that could be injurious to employees, cleaned and/or decontaminated before being overhauled or placed in storage?
- Are employees prohibited from smoking or eating in any area where contaminants are present that could be injurious if ingested?
- When employees are required to change from street clothing into protective clothing, is a clean changeroom with separate storage facility for street and protective clothing provided?
- Are employees required to shower and wash their hair as soon as possible after a known contact has occurred with a carcinogen?
- When equipment, materials, or other items are taken into or removed from a carcinogen regulated area, is it done in a manner that will not contaminate non-regulated areas or the external environment?

TIRE INFLATION

- Where tires are mounted and/or inflated on drop center wheels is a safe practice procedure posted and enforced?
- Where tires are mounted and/or inflated on wheels with split rims and/or retainer rings is a safe practice procedure posted and enforced?
- Does each tire inflation hose have a clip-on chuck with at least 24 inches of hose between the chuck and an in-line hand valve and gauge?
- Does the tire inflation control valve automatically shut off the airflow when the valve is released?
- Is a tire restraining device such as a cage, rack or other effective means used while inflating tires mounted on split rims, or rims using retainer rings?
- Are employees strictly forbidden from taking a position directly over or in front of a tire while it's being inflated?

EMERGENCY ACTION PLAN

- Are you required to have an emergency action plan?
- Does the emergency action plan comply with requirements of T8CCR 3220(a)?
- Have emergency escape procedures and routes been developed and communicated to all employees?
- Do employees, who remain to operate critical plant operations before they evacuate, know the proper procedures?
- Is the employee alarm system that provides a warning for emergency action recognizable and perceptible above ambient conditions?
- Are alarm systems properly maintained and tested regularly?
- Is the emergency action plan reviewed and revised periodically?
- Do employees know their responsibilities:
 - For reporting emergencies?
 - During an emergency?
 - For conducting rescue and medical duties?

INFECTION CONTROL

- Are employees potentially exposed to infectious agents in body fluids?

- Have occasions of potential occupational exposure been identified and documented?
- Has a training and information program been provided for employees exposed to or potentially exposed to blood and/or body fluids?
- Have infection control procedures been instituted where appropriate, such as ventilation, universal precautions, workplace practices, and personal protective equipment?
- Are employees aware of specific workplace practices to follow when appropriate? (Hand washing, handling sharp instruments, handling of laundry, disposal of contaminated materials, reusable equipment.)
- Is personal protective equipment provided to employees, and in all appropriate locations?
- Is the necessary equipment (i.e. mouthpieces, resuscitation bags, and other ventilation devices) provided for administering mouth-to-mouth resuscitation on potentially infected patients?
- Are facilities/equipment to comply with workplace practices available, such as hand-washing sinks, biohazard tags and labels, needle containers, detergents/disinfectants to clean up spills?
- Are all equipment and environmental and working surfaces cleaned and disinfected after contact with blood or potentially infectious materials?
- Is infectious waste placed in closable, leak proof containers, bags or puncture-resistant holders with proper labels?
- Has medical surveillance including HBV evaluation, antibody testing and vaccination been made available to potentially exposed employees?
- Training on universal precautions?
- Training on personal protective equipment?
- Training on workplace practices, which should include blood drawing, room cleaning, laundry handling, clean up of blood spills?
- Training on needlestick exposure/management?
- Hepatitis B vaccinations?

ERGONOMICS

- Can the work be performed without eyestrain or glare to the employees?
- Does the task require prolonged raising of the arms?
- Do the neck and shoulders have to be stooped to view the task?
- Are there pressure points on any parts of the body (wrists, forearms, back of thighs)?
- Can the work be done using the larger muscles of the body?
- Can the work be done without twisting or overly bending the lower back?
- Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks?
- Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- Are all pieces of furniture adjusted, positioned and arranged to minimize strain on all parts of the body?

VENTILATION FOR INDOOR AIR QUALITY

- Does your HVAC system provide at least the quantity of outdoor air required by the State Building Standards Code, Title 24, Part 2 at the time the building was constructed?
- Is the HVAC system inspected at least annually, and problems corrected?
- Are inspection records retained for at least 5 years?

CRANE CHECKLIST

- Are the cranes visually inspected for defective components prior to the beginning of any work shift?
- Are all electrically operated cranes effectively grounded?
- Is a crane preventive maintenance program established?
- Is the load chart clearly visible to the operator?
- Are operating controls clearly identified?
- Is a fire extinguisher provided at the operator's station?

- Is the rated capacity visibly marked on each crane?
- Is an audible warning device mounted on each crane?
- Is sufficient illumination provided for the operator to perform the work safely?
- Are cranes of such design, that the boom could fall over backward, equipped with boomstops?
- Does each crane have a certificate indicating that required testing and examinations have been performed?
- Are crane inspection and maintenance records maintained and available for inspection?

HAZARD ASSESSMENT AND CORRECTION RECORD

- Date of Inspection: Person Conducting Inspection:

- Unsafe Condition or Work Practice:

- Corrective Action Taken:

- Date of Inspection: Person Conducting Inspection:

- Unsafe Condition or Work Practice:

- Corrective Action Taken:

- Date of Inspection: Person Conducting Inspection:

- Unsafe Condition or Work Practice:

- Corrective Action Taken:

ACCIDENT/EXPOSURE INVESTIGATION REPORT

- Date & Time of Accident:

- Location:
- Accident Description:
- Employees Involved:
- Preventive Action Recommendations:
- Corrective Actions Taken:
- Manager Responsible: Date Completed:

WORKER TRAINING AND INSTRUCTION RECORD

EMPLOYEE NAME	TRAINING DATES	TYPE OF TRAINING	TRAINERS

6. Lockout / Blockout Guidance

Lockout/ Blockout

**General conditions that require locking out
and blocking out machinery**

Components of a good lockout program

Different methods of locking out equipment



S-515 revised June 2005

State of California

Department of Industrial Relations - Division of Occupational Safety and Health

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Introduction

Failure to lock out and block out machinery before working on it is a major cause of serious injury and death in California.

Workers are electrocuted—or lose fingers, hands, arms—or suffer severe crushing injuries—because machinery is inadvertently turned on while it is being maintained, repaired or adjusted.

These injuries can be prevented by establishing and using an effective lockout program.

Failure to lock out and block out machinery has caused devastating injury and death to workers, as the following case histories indicate:

- Three men were doing maintenance inside an asphalt pug mill type mixer. One employee was still inside the mixer when the power was turned back on, thereby starting the mixer. He was killed instantly.

Cause: failure to disconnect power source and lock out.

- A cotton gin operator climbed into a jammed cotton cleaner/seperator. The toggle switch controlling the operation of the gin was turned off but not locked out. For some reason, someone accidentally turned the machine back on, not knowing the gin operator was inside the gin. The operator's left leg was pulled through the feed rollers.

Cause: failure to disconnect power source and lock out.

- A warehouseman was repairing an air-operated valve which he had turned off but not disconnected and locked out. During the repair operation he slipped and inadvertently turned on the switch which let air into the valve. His hand was caught and crushed in the valve.

Cause: failure to disconnect power source and lock out.

- A maintenance employee was changing V-belts on an exhaust fan. He de-energized the fan before starting work. However, he did not block

the blades of the fan. The suction in the duct work turned the fan blades, and his hand was caught in the V-belt drive.

Cause: failure to block out potential energy sources.

Lockout/blockout means that any energy source—whether electrical, hydraulic, mechanical, compressed air, or any other source that might cause unexpected movement—must be disengaged or blocked, and electrical sources must be de-energized and LOCKED or positively sealed in the OFF position.

But even a locked-out machine may not be safe if there are parts of the machine that are not BLOCKED to prevent inadvertent movement. Potential energy that may need to be blocked can come from suspended parts, subject to gravity, or may be energy stored in springs.

In a U.S. Bureau of Labor Statistics study on injuries related to servicing equipment, 80 percent of the workers surveyed failed to even turn off the equipment before performing the service work.

There is a difference between turning off a machine and actually disengaging or de-energizing a piece of equipment. When you turn off a control switch, you are opening a circuit. There is still electrical energy at the switch, and a short in the switch or someone inadvertently turning on the machine may start the machine running again.

Statistics show that of the 20 percent of the workers who did turn off the machinery, about half of them were injured when someone, generally a coworker who was unaware that the machine was being serviced, accidentally reactivated the machinery.

And a fifth of those workers who turned off the control switch were injured by the energy still in the machine which should have been blocked. The moving parts of the machine either continued to coast, or the parts moved when the jam-up was cleared.

An accident in California illustrates this problem. A table saw was turned off, but the saw blade was still coasting and had not come to a complete stop. An employee began cleaning the machine, and his finger was amputated by the blade.

Other accidents have occurred when the control switch on a machine was turned off, but a short in the switch restarted the machine. Accidents have also occurred even when workers did take the necessary steps of disconnecting the main power source. But they did not perform a crucial step for a complete lockout procedure.

They did not test the equipment to make sure the machinery was, in fact, de-energized.

In one case, the lockout had been done on the wrong power line. In another case, a second power line had been spliced into the wiring beyond the point of the lockout.

To prevent these kinds of lockout/blockout accidents, General Industry Safety Order 3203—in Title 8 of the *California Code of Regulations*—requires every employer to inaugurate and

maintain an accident prevention program which shall include but not be limited to the following:

1. A training program designed to instruct employees in general safe work practices, plus specific instruction with regard to hazards and unique to any job assignments.

2. Scheduled periodic inspections to identify and correct any unsafe conditions and work practices that may be found. The employer shall correct unsafe conditions and work practices found as a result of the required inspections.

To be effective, a lockout/blockout program should include:

- A survey of the equipment by responsible persons who are thoroughly familiar with its operation and associated hazards, in order to identify which machinery should be locked and blocked out.

- Identification and labeling of lockout devices.
- Selection and purchase of locks, tags and blocks.

- A standard operating procedure that is written and followed.

Equipment Survey: Identifying & Labeling the Energy Disconnecting Means

Make an initial survey of the plant or operation to identify all energy sources.

This must be done by physical inspection, possibly in combination with a study of drawings and equipment manuals.

Locate and mark the disconnecting means, indicating their function. Categorize the identification details as to equipment supplied and energy type and magnitude, from material worked out beforehand in this lockout/blockout program planning study.

Example:

Line #1, Press #4, Electrical 480 volts

A sign or sticker—"LOCKOUT HERE"—placed at the disconnecting means will help direct workers to correct lockout devices.

After surveying the operation, additional and more practical means may be installed.

In complicated operations, schematics of just the disconnecting means may need to be drawn up by the plant's engineering department.

Methods of Locking Out Controls

There are many different ways to lock out a piece of equipment. Commonly, the main disconnect switch has one opening where a lock can be placed.

If more than one employee works on the equipment, a lockout adaptor suitable for the installation of several locks must be used, enabling all workers to lock out the machine with their individual locks. See *Figure 1*.

If the switches are in a metal box, the box itself must be locked out. See *Figure 2*.

If a fuse was removed in order to de-energize the equipment, the fuse box must be locked.

If the controls are in a metal-covered box, a common hasp can be welded or riveted to the door, along with a lock staple. Then the switch can be “opened” and the door closed and padlocked.

Fuse boxes can also be locked in this way.

Machines activated by compressed air or steam will have valves that control movement. These valves will need not only to be locked out, but also bled to release any back pressure.

Figures 3 and 4 show types of bleeder valves that can be locked out.

Lockout Procedure Requirements

1. All maintenance personnel are issued a suitable lock (or locks). The lock has the individual worker’s name and other identification on it. Each worker has the only key to the lock.

2. The worker checks to be sure that no one is operating the machinery BEFORE turning off the power. The machine operator is informed before the power is turned off. Sudden loss of power could cause an accident.

3. Steam, air, and hydraulic lines should be bled, drained, and cleaned out. There should be no pressure in these lines or in reservoir tanks.

4. Any mechanism under load or pressure, such as springs, should be released and blocked.

5. Each person who will be working on the machinery should put a lock on the machine’s lockout device(s). Each lock must remain on the machine until the work is completed.

Only the worker who placed the lock should remove his/her lock.

6. *All energy sources which could activate the machine must be locked out.*

7. The main valve or main electrical disconnect must be tested to be sure that the power to the machine is off.

8. Electrical circuits must be checked by qualified persons with proper and calibrated electrical testing equipment. An electrical failure could energize the equipment, even if the switch is in the off position. Stored energy in electrical capacitors should be safely discharged.

9. CAUTION: Return disconnects and operating controls to the off position after each test.

10. Attach accident prevention tags which give the reason for placing the tag, the name of the person placing the tag, how he/she may be contacted, and the date and time the tag was placed. *No one removes the lock without proper authority.*

Figure #1

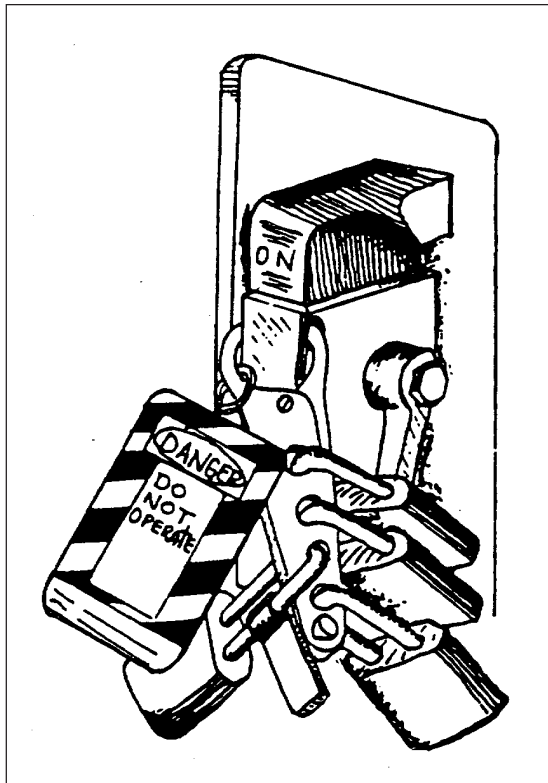


Figure #2

Figure 2 adapted from Machinery Lockout by Employers Insurance of Wausau, 1982.

Figure 3 reprinted from Concepts and Techniques of Machine Safeguarding. OSHA Publication 3067, 1981.

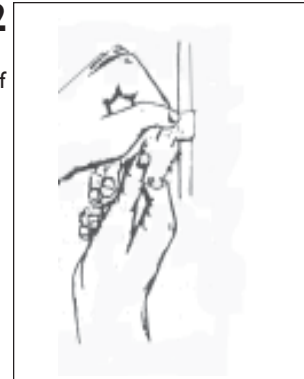


Figure #3

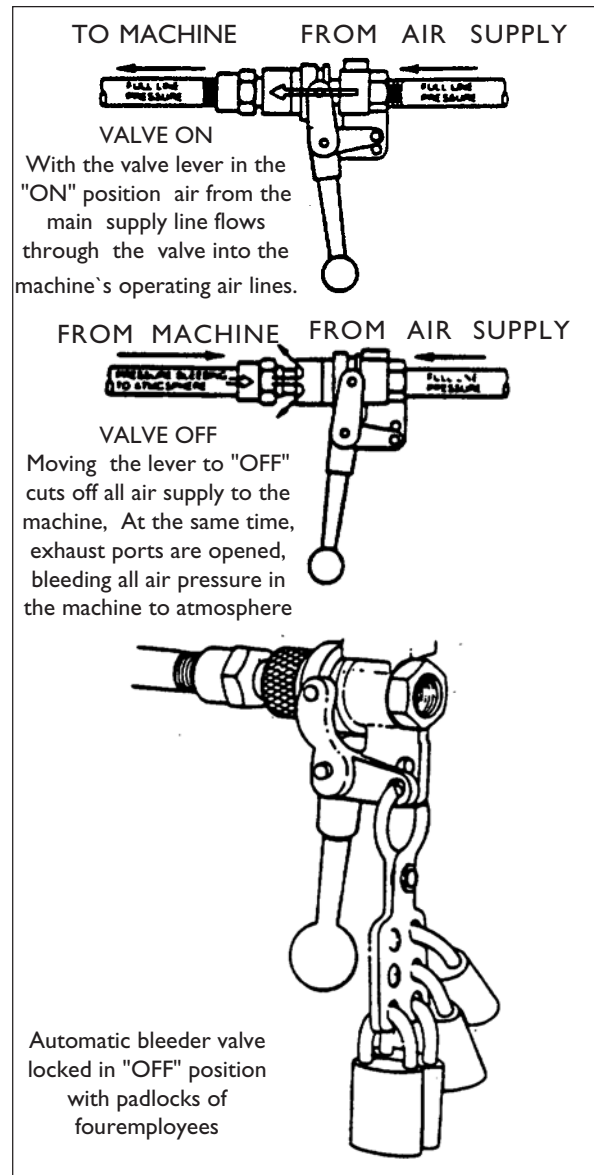
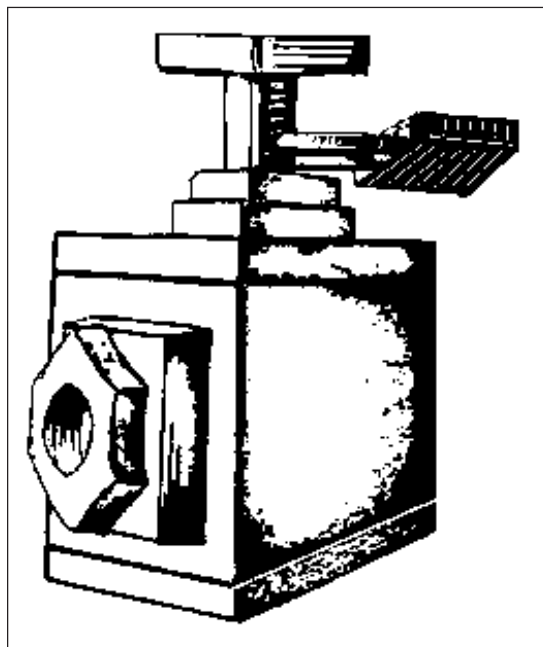


Figure #4



Locks, Blocks, & Accident Prevention Tags

Locks

Each worker must have his/her own lock and the only key to that lock.

The lock should be substantial and durable, and should have the name of the employee on it. In addition, locks can be color-coded to indicate different shifts or types of crafts.

When more than one worker is servicing a piece of equipment that must be locked out, a lockout adaptor can be used which allows all the workers to place their locks on the disconnecting means. After the work is completed, each worker removes his/her lock and the machine is then returned to service.

Tags

DO NOT USE TAGS ALONE. Use tags or signs in addition to locks.

Tags must state the:

- reason for the lockout.
- name of the employee who is working on the equipment and how that person may be reached.
- date and time the tag was put in place.

Tagout devices shall be capable of enduring at least 50 pounds of pull, and a non-reusable type.

Blocks

Suitable blocks are another important safety device for making a piece of equipment safe to be repaired or serviced. Blocks must be placed under raised dies, lifts, or any equipment that might inadvertently move by sliding, falling or rolling.

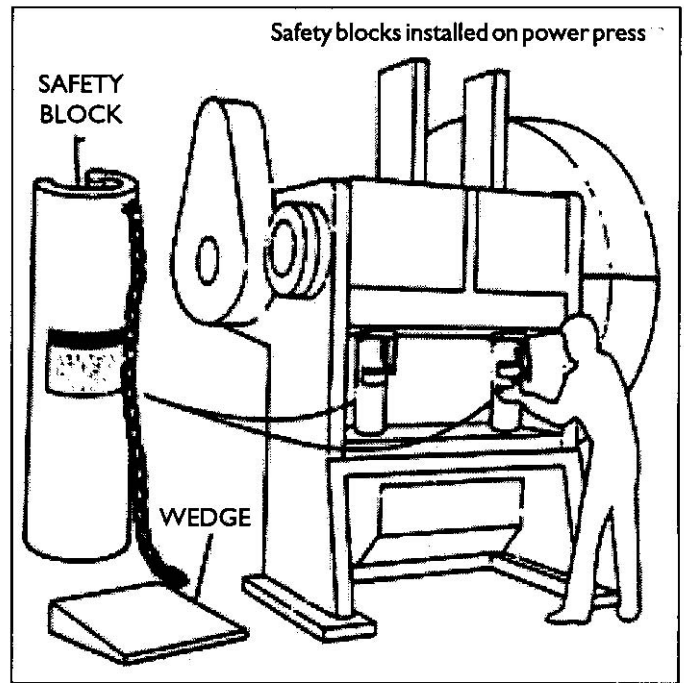
Blocks, special brackets, or special stands such as those commonly used under raised vehicles, must be available and always used.

Another form of blocking is the placement of a blind. A blind is a disk of metal placed in a pipe to ensure that no air, steam, or other substance will pass through that point if the system is accidentally activated.

Before installing blinds or blocks, bleed down steam, air, or hydraulic lines to get rid of any pressure. Coiled springs, spring-loaded devices, or suspended loads must also be released so that their stored energy will not result in inadvertent movement. See *Figure 5*.

Figure 5

Figure 5 reprinted from *Concepts and Techniques of Machine Safeguarding*, OSHA Publication OSHA 3067, 1981.



Written Standard Operating Procedure

A lockout usually requires coordination between the production and maintenance departments.

It frequently extends over two shifts, which adds to the number of employees involved and complicates portions of the lockout/blockout procedure.

The best way to put into practice an effective lockout program is to first prepare a written, standardized operating procedure, then carry out the necessary training and responsible supervision.

In a check list format, prepare a written sequence for access, de-energizing, lockout, clearance, release, and start-up.

Also consider stored energy. Conditions not hazardous during normal operations can become hazardous when guards are removed during maintenance and servicing.

In writing a lockout procedure, consider:

- job objectives and equipment involved.
- detailing the energy sources for each machine and lockout procedures.
- steps for shutting down and securing machinery.
- steps to verify lockout effectiveness.
- procedural steps for applying lockout and tagout.
- procedural steps for restarting.
- employees authorized to perform lockout.
- annual compliance audit.

In training for lockout procedure, consider:

- Employees must understand what equipment tagout means, and what to do if they want to operate it.
- The authorized person must be trained in written procedure and fully knowledgeable of hazardous energies specifically related to equipment.
- Employees reassigned to different equipment must be retrained.
- Contractors working on site must have a general understanding of lockout/tagout and follow the employer's procedures.

In large and complex facilities, permits signed by designated supervisors should be obtained before a lockout is begun. See *sample permit in this publication*.

A signed permit is particularly important if maintenance work is being performed by an outside contractor who may be familiar with the particular piece of equipment being serviced, but who will not know about the plant's operation overall.

Testing Equipment During Lockout

In many maintenance and repair operations, machinery may need to be tested—and for that purpose, energized before additional maintenance work can be performed.

This procedure must be followed:

1. Clear all personnel to safety.
2. Clear away tools and materials from equipment.
3. Remove lockout devices and re-energize systems, following the established safe procedure.
4. Proceed with tryout or test.
5. Neutralize all energy sources once again, purge all systems, and lockout prior to continuing work.

Equipment design and performance limitations may dictate that effective alternative worker protection be provided when the established lockout procedure is not feasible.

If machinery must be capable of movement in order to perform a maintenance task, such as a cleaning operation, workers can use extension tools—extended swabs, brushes, scrapers—to protect themselves from injury.

Restoring Equipment to Service

After the work is completed and the equipment is ready to be returned to normal operation, this procedure must be followed:

1. Remove all non-essential items.
2. See that all equipment components are operationally intact, including guards and safety devices.
3. Repair or replace defective guards before removing lockouts.
4. Remove each lockout device using the correct removal sequence.
5. Make a visual check before restoring energy to ensure that everyone is physically clear of the equipment.

If you have questions or concerns, or if you need additional information on lockout/blockout procedures, for free assistance contact the Cal/OSHA Consultation Service office in your area. Addresses and phone numbers are listed on the inside front cover of this publication.

Sample Tag



DANGER

Sample Safety Permit

S A F E T Y P E R M I T		DATE _____
PERMIT ISSUED TO <input type="checkbox"/> MAINTENANCE <input type="checkbox"/> OUTSIDE CONTRACTOR NAME _____	TIME ISSUED _____ EXPIRATION TIME _____	
JOB DESCRIPTION _____ _____ _____		
CHECKED PRECAUTIONS SHALL BE OBSERVED <input type="checkbox"/> TAG & DISCONNECT ELECTRIC EQUIPMENT <input type="checkbox"/> FIRE EXTINGUISHER AT SITE <input type="checkbox"/> LINES BLINDED <input type="checkbox"/> CONTAINS SPARKS <input type="checkbox"/> VALVES CLOSED & TAGGED <input type="checkbox"/> KEEP AREA FREE OF COMBUSTIBLES <input type="checkbox"/> LOCKED OUT <input type="checkbox"/> BARRICADE AREA <input type="checkbox"/> LINES DISCONNECTED <input type="checkbox"/> SHIELD ARC <input type="checkbox"/> BLEEDERS OPEN	PROTECTIVE EQUIPMENT REQUIRED <input type="checkbox"/> WEAR GOGGLES FACE SHIELD <input type="checkbox"/> WEAR RUBBER BOOTS <input type="checkbox"/> WEAR GLOVES RUBBER THERMAL <input type="checkbox"/> WEAR SAFETY BELT & LINE <input type="checkbox"/> WEAR HOOD ACID THERMAL <input type="checkbox"/> WEAR RESPIRATOR DUST CHEMICAL <input type="checkbox"/> WEAR SUIT RUBBER THERMAL	
OTHER PRECAUTIONS _____ _____		
PERMIT CONDITIONS & REQUIREMENTS UNDERSTOOD _____ _____	APPROVALS SAFETY INSPECTOR _____ OPERATIONS FOREMAN _____ TIME _____ OPERATIONS FOREMAN _____ TIME _____	
SIGNED ENGINEER-FOREMAN-CRAFTSMAN _____		
Work must begin within ninety minutes of issuance of this permit. If the work is interrupted the foreman, craftsman, or contractor must indicate equipment condition to operations foreman or operator when leaving job for more than two hours or when job is complete. <input type="checkbox"/> JOB COMPLETED _____ <input type="checkbox"/> JOB INCOMPLETE _____ _____ _____		
THIS PERMIT IS TO BE KEPT ON THE JOB UNTIL WORK IS COMPLETED, PERMIT EXPIRES OR IS REVOKED		

Reproduced with permission from American National Standard (Lockout/Tagout of Energy Sources—Minimum Safety Requirements, ANSI Z244.1), © 1982 American National Standards Institute. Copies of this standard may be purchased from: American National Standards Institute, 1430 Broadway, New York NY 10018.

Sample Lockout Procedure

LOCKOUT

Lockout procedure for _____
(name of your company)

Purpose

This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

Responsibility

The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by (designated individual). Each new or transferred affected employee shall be instructed by (designated individuals) in the purpose and use of the lockout procedure.

Preparation for Lockout

Employees authorized to perform lockout shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors. Before lockout commences, job authorization should be obtained.

Sequence of Lockout Procedure

- 1) Notify all affected employees that a lockout is required and the reason therefor.
- 2) If the equipment is operating, shut it down by the normal stopping procedure (such as: depress stop button, open toggle switch).
- 3) Operate the switch, valve, or other energy isolating devices so that the energy source(s) (electrical, mechanical, hydraulic, other) is disconnected or isolated from the equipment. Stored energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure, must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down.
- 4) Lockout energy isolating devices with an assigned individual lock.
- 5) After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
CAUTION: Return operating controls to neutral position after the test.
- 6) The equipment is now locked out.

Restoring Equipment to Service

- 1) When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.
- 2) When equipment is clear, remove all locks. The energy isolating devices may be operated to restore energy to equipment.

Procedure Involving More Than One Person

In the preceding steps, if more than one individual is required to lock out equipment, each shall place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

Rules for Using Lockout Procedure

All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.

Lockout/Blockout

Applicable Safety Orders

3203. Injury and Illness Prevention Program.

(a) Effective July 1, 1991, every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program (Program). The Program shall be in writing and shall, at a minimum:

(1) Identify the person or persons with authority and responsibility for implementing the Program.

(2) Include a system for ensuring that employees comply with safe and healthy work practices. Substantial compliance with this provision includes recognition of employees who follow safe and healthful work practices, training and retraining programs, disciplinary actions, or any other such means that ensures employee compliance with safe and healthful work practices.

(3) Include a system for communicating with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. Substantial compliance with this provision includes meetings, training programs, posting, written communications, a system of anonymous notification by employees about hazards, labor/management safety and health committees, or any other means that ensures communication with employees.

Exception: Employers having fewer than 10 employees shall be permitted to communicate to and instruct employees orally in general safe work practices with specific instructions with respect to hazards unique to the employees' job assignments as compliance with subsection (a)(3).

(4) Include procedures for identifying and evaluating workplace hazards including scheduled periodic inspections to identify unsafe conditions and work practices. Inspections shall be made to identify and evaluate hazards:

(A) When the Program is first established;

Exception: Those employers having in place on July 1, 1991 a written Injury and Illness Prevention Program complying with previously existing section 3203.

(B) Whenever new substances, processes, procedures, or equipment are introduced to the workplace that represent a new occupational safety and health hazard; and

(C) Whenever the employer is made aware of a new or previously unrecognized hazard.

(5) Include a procedure to investigate occupational injury or occupational illness.

(6) Include methods and/or procedures for correcting unsafe or unhealthy conditions, work practices and work procedures in a timely manner based on the severity of the hazard:

(A) When observed or discovered; and

(B) When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, remove all exposed personnel from the area except those necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards.

(7) Provide training and instruction:

(A) When the Program is first established;

Exception: Employers having in place on July 1, 1991 a written Injury and Illness Prevention Program complying with the previously existing Accident Prevention Program in section 3203.

(B) To all new employees;

(C) To all employees given new job assignments for which training has not previously been received;

(D) Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;

(E) Whenever the employer is made aware of a new or previously unrecognized hazard; and

(F) For supervisors to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed.

(b) Records of the steps taken to implement and maintain the Program shall include:

(1) Records of scheduled and periodic inspections required by subsection (a)(4) to identify unsafe conditions and work practices, including person(s) conducting the inspection, the unsafe conditions and work practices that have been identified, and action taken to correct the identified unsafe conditions and work practices. These records shall be maintained for three (3) years; and

Exception: Employers with fewer than 10 employees may elect to maintain the inspection records only until the hazard is corrected.

(2) Documentation of safety and health training required by subsection (a)(7) for each employee, including employee name or other identifier, training dates, type(s) of training, and training providers. This documentation shall be maintained for three (3) years.

Exception No. 1: Employers with fewer than 10 employees can substantially comply with the documentation provision by maintaining a log of instructions provided to the employee with respect to the hazards unique to the employee's job assignment when first hired or assigned new duties.

Exception No. 2: Training records of employees who have worked for less than one (1) year for the employer need not be retained beyond the term of employment if they are provided to the employee upon termination of employment.

Exception No. 3: For employers with fewer than 20 employees who are in industries that are not on a designated list of high-hazard industries established by the Department of Industrial Relations (Department) and who have a Workers' Compensation Experience

Modification Rate of 1.1 or less, and for any employers with fewer than 20 employees who are in industries on a designated list of low-hazard industries established by the Department, written documentation of the Program may be limited to the following requirements:

A. Written documentation of the identity of the person or persons with authority and responsibility for implementing the Program as required by subsection (a)(1).

B. Written documentation of scheduled periodic inspections to identify unsafe conditions and work practices as required by subsection (a)(4).

C. Written documentation of training and instruction as required by subsection (a)(7).

Exception No. 4: Local governmental entities (any county, city, city and county, or district, or any public or quasi-public corporation or public agency therein, including any public entity, other than a state agency, that is a member of, or created by, a joint powers agreement) are not required to keep records concerning the steps taken to implement and maintain the Program.

Note 1: Employers determined by the Division to have historically utilized seasonal or intermittent employees shall be deemed in compliance with respect to the requirements for a written Program if the employer adopts the Model Program prepared by the Division and complies with the requirements set forth therein.

Note 2: Employers in the construction industry who are required to be licensed under Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code may use records relating to employee training provided to the employer in connection with an occupational safety and health training program approved by the Division, and shall only be required to keep records of those steps taken to implement and maintain the program with respect to hazards specific to the employee's job duties.

(c) Employers who elect to use a labor/management safety and health committee to comply with the communication requirements of subsection (a)(3) of this section shall be presumed to be in substantial compliance with subsection (a)(3) if the committee:

(1) Meets regularly, but not less than quarterly;

(2) Prepares and makes available to the affected employees written records of the safety and health issues discussed at the committee meetings and maintained for review by the Division upon request. The committee meeting records shall be maintained for three (3) years;

(3) Reviews results of the periodic, scheduled worksite inspections;

(4) Reviews investigations of occupational accidents and causes of incidents resulting in occupational injury, occupational illness, or exposure to hazardous substances, and where appropriate, submits suggestions to management for the prevention of future incidents;

(5) Reviews investigations of alleged hazardous conditions brought to the attention of any committee member. When determined necessary by the committee, the committee may conduct its own inspection and investigation to assist in remedial solutions;

(6) Submits recommendations to assist in the evaluation of employee safety suggestions; and

(7) Upon request from the Division, verifies abatement action taken by the employer to abate citations issued by the Division.

3314. The Control of Hazardous Energy for the Cleaning, Repairing, Servicing, Setting-Up, and Adjusting Operations of Prime Movers, Machinery and Equipment, Including Lockout/Tagout

(a) Application.

(1) This Section applies to the cleaning, repairing, servicing, setting-up and adjusting of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.

(2) For the purposes of this Section, cleaning, repairing, servicing and adjusting activities shall include unjamming prime movers, machinery and equipment.

(3) Requirements for working on energized electrical systems are prescribed in Sections 2320.9 or 2940.

(b) Definitions:

Affected employee. For the purpose of this section, an employee whose job requires them to operate or use a machine or equipment on which cleaning, repairing, servicing, setting-up or adjusting operations are being performed under lockout or tagout, or whose job requires the employee to work in an area in which such activities are being performed under lockout or tagout.

Authorized employee or person. For the purposes of this section, a qualified person who locks out or tags out specific machines or equipment in order to perform cleaning, repairing, servicing, setting-up, and adjusting operations on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties including performing cleaning, repairing, servicing, setting-up and adjusting operations covered under this section.

Locked out. The use of devices, positive methods and procedures, which will result in the effective isolation or securing of prime movers, machinery and equipment from mechanical, hydraulic, pneumatic, chemical, electrical, thermal or other hazardous energy sources.

Normal Production Operations. The utilization of a machine or equipment to perform its intended production function.

Prime Mover. The source of mechanical power for a machine.

(c) Cleaning, Servicing and Adjusting Operations.

Machinery or equipment capable of movement shall be stopped and the power source de-energized or disengaged, and, if necessary, the moveable parts shall be mechanically blocked or locked out to prevent inadvertent movement, or release of stored energy during cleaning, servicing and adjusting operations. Accident prevention signs or tags or both shall be placed on the controls of the power source of the machinery or equipment.

(1) If the machinery or equipment must be capable of movement during this period in order to perform the specific task, the employer shall minimize the hazard by providing and requiring the use of extension tools (eg., extended swabs, brushes, scrapers) or other methods or means to protect employees from injury due to such movement. Employees shall be made familiar with the safe use and maintenance of such tools, methods or means, by thorough training.

(d) Repair Work and Setting-Up Operations.

Prime movers, equipment, or power-driven machines equipped with lockable controls or readily adaptable to lockable controls shall be locked out or positively sealed in the "off" position during repair work and setting-up operations. Machines, equipment, or prime movers not equipped with lockable controls or readily adaptable to lockable controls shall be considered in compliance with Section 3314 when positive means are taken, such as de-energizing or disconnecting the equipment from its source of power, or other action which will effectively prevent the equipment, prime mover or machine from inadvertent movement or release of stored energy. In all cases, accident prevention signs or tags or both shall be placed on the controls of the equipment, machines and prime movers during repair work and setting-up operations.

Exceptions to subsections (c) and (d):

I. Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations are not covered by the requirements of Section 3314 if they are routine,

repetitive, and integral to the use of the equipment or machinery for production, provided that the work is performed using alternative measures which provide effective protection.

2. Work on cord and plug-connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the work.

3. Where an employer has a uniform system with unique and personally identifiable locks designed for lockout, that are placed on the source of energy, accident prevention signs or tags are not required.

(e) Materials and Hardware. The employer shall provide accident prevention signs, tags, padlocks, seals or other similarly effective means which may be required for cleaning, servicing, adjusting, repair work or setting-up operations. Signs, tags, padlocks, and seals shall have means by which they can be readily secured to the controls. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

(f) Repetitive Process Machines. On repetitive process machines, such as numerical control machines, which require power or current continuance to maintain indexing and where repair, adjustment, testing, or setting-up operations cannot be accomplished with the prime mover or hazardous energy source disconnected, such operations may be performed under the following conditions:

(1) The operating station where the machine may be activated must at all times be under the control of a qualified operator or craftsman.

(2) All participants must be in clear view of the operator or in positive communication with each other.

(3) All participants must be beyond the reach of machine elements which may move rapidly and present a hazard to them.

(4) Where machine configuration or size requires that the operator leave his control station to install tools, and where machine elements exist which may move rapidly if activated, such elements must be separately locked out by positive means.

(5) During repair procedures where mechanical components are being adjusted or replaced, the machine shall be de-energized or disconnected from its power source.

Note: "Participant" shall mean any other person(s) engaged in the repair, adjustment, testing, or setting up operation in addition to the qualified operator or craftsman having control of the machine operating station.

(g) Hazardous Energy Control Procedures. A hazardous energy control procedure shall be developed and utilized by the employer when employees are engaged in the cleaning, repairing, servicing, setting-up or adjusting of prime movers, machinery and equipment.

(1) The procedure shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance, including but not limited to, the following:

(A) A statement of the intended use of the procedure;

(B) The procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

(C) The procedural steps for the placement, removal and transfer of lockout devices and tagout devices and responsibilities; and,

(D) The requirements for testing a machine or equipment, to determine and verify the effectiveness of lockout devices, tagout devices and other hazardous energy control devices.

(2) The employer's hazardous energy control procedures shall be documented in writing.

(A) The employer's hazardous energy control procedure shall include separate procedural steps for the safe lockout/tagout of each machine or piece of equipment affected by the hazardous energy control procedure.

Exception to subsection (g)(2)(A): The procedural steps for the safe lockout/tagout of prime movers, machinery or equipment may be used for a group or type of machinery or equipment, when either of the following two conditions exist:

(1) Condition 1:

(A) The operational controls named in the procedural steps are configured in a similar manner, and

(B) The locations of disconnect points (energy isolating devices) are identified, and

(C) The sequence of steps to safely lockout or tagout the machinery or equipment are similar.

(2) Condition 2: The machinery or equipment has a single energy supply that is readily identified and isolated and has no stored or residual hazardous energy.

(h) Periodic inspection.

The employer shall conduct a periodic inspection of the energy control procedure(s) at least annually to evaluate their continued effectiveness and determine necessity for updating the written procedure(s).

(1) The periodic inspection shall be performed by an authorized employee or person other than the one(s) utilizing the hazardous energy control procedures being inspected.

(2) Where lockout and/or tagout is used for hazardous energy control, the periodic inspection shall include a review between the inspector and authorized employees of their responsibilities under the hazardous energy control procedure being inspected.

(3) The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the hazardous energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

(i) Whenever outside servicing personnel are to be engaged in activities covered by this section, the on-site employer's lockout or tagout procedures shall be followed.

(j) Training.

(1) Authorized employees shall be trained on hazardous energy control procedures and on the hazards related to performing activities required for cleaning, repairing, servicing, setting-up and adjusting prime movers, machinery and equipment.

(2) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(3) All other employees whose work operations may be in an area where energy control procedures may be utilized, shall be instructed about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

(4) Such training shall be documented as required by Section 3203.

NOTE

Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

HISTORY

1. Amendment filed 10-25-74; effective thirtieth day thereafter (Register 74, No. 43).

2. Repealer and new subsections (a), (b) and (c) and amendment of subsection (d) filed 5-12-77; effective thirtieth day thereafter (Register 77, No. 20).

3. Amendment of subsection (c) and adoption of subsections (f)-(i) filed 12-23-91; operative 1-22-92 (Register 92, No. 12).

4. Amendment of subsections (a) and (b) filed 3-24-94; operative 4-25-94 (Register 94, No. 12).

5. Amendment of section heading and section filed 12-7-2004; operative 1-6-2005 (Register 2004, No. 50).

6004. Accident Prevention Tags.

(b) Definitions.

“Major message” means that portion of a tag’s inscription that is more specific than the signal word and that indicates the specific hazardous condition or the instruction to be communicated to the employee. Examples include: “High Voltage,” “Close Clearance,” “Do Not Start,” or “Do Not Use,” or a corresponding pictograph used with a written text or alone.

“Pictograph” means a pictorial representation used to identify a hazardous condition or to convey a safety instruction.

“Signal word” means that portion of a tag’s inscription that contains the word or words that are intended to capture the employee’s immediate attention.

“Tag” means a device usually made of card, paper, pasteboard, plastic or other material used to identify a hazardous condition.

(c) Use. Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected or not readily apparent. Tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding or other positive means of protection are being used.

(d) General Tag Criteria. All required tags shall meet the following criteria:

(1) Tags shall contain a signal word and a major message.

(A) The signal word shall be either “Danger,” “Caution,” “Biological Hazard,” “BIOHAZARD,” or the biological hazard symbol.

(B) The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee.

(2) The signal word shall be readable at a minimum distance of five feet or such greater distance as warranted by the hazard.

(3) The tag’s major message shall be presented in either pictographs, written text or both.

(4) The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.

(5) All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

(6) Tags shall be affixed as close as safely possible to their respective hazards by a positive means such as string, wire, or adhesive that prevents their loss or unintentional removal.

(e) Danger Tags. Danger tags shall only be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees.

(f) Caution Tags. Caution tags shall only be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice

presents a lesser threat of employee injury.

(g) Warning Tags. Warning tags may be used to represent a hazard level between “Caution” and “Danger,” instead of the required “Caution” tag, provided that they have a signal word of “Warning,” an appropriate major message, and otherwise meet the general tag criteria of subsection (d) of this section.

2320.4. De-energized Equipment or Systems.

(a) An authorized person shall be responsible for the following before working on de-energized electrical equipment or systems unless the equipment is physically removed from the wiring system:

(1) Notifying all involved personnel.

(2) Locking the disconnecting means in the “open” position with the use of lockable devices, such as padlocks, combination locks or disconnecting of the conductor(s) or other positive methods or procedures which will effectively prevent unexpected or inadvertent energizing of a designated circuit, equipment or appliance.

Exception: Locking is not required under the following conditions:

1. Where suitable tagging procedures are used, and

2. Where the disconnecting means is accessible only to personnel instructed in these tagging procedures.

(3) Tagging the disconnecting means with suitable accident prevention tags conforming to the provisions of Section 2320.6.

(4) Effectively blocking the operation or dissipating the energy of all stored energy devices which present a hazard, such as capacitors or pneumatic, spring-loaded and like mechanisms.

2320.5. Energizing (or Re-energizing) Equipment or Systems.

(a) An authorized person shall be responsible for the following before energizing equipment or systems which have been de-energized:

(1) Determining that all persons are clear from hazards which might result from the equipment or systems being energized.

(2) Removing locking devices and tags.

A) Locking devices and tags may be removed only by the employee who placed them. Locking devices and tags shall be removed upon completion of the work and after the installation of the protective guards and/or safety interlock systems.

Exception: When the employee has left the premises or is otherwise unavailable, other persons may be authorized by the employer to remove the locking devices and tags in accordance with a procedure determined by the employer.

2320.6. Accident Prevention Tags.

(a) Suitable accident prevention tags shall be used to control a specific hazard. Such tags shall provide the following minimum information:

(1) Reason for placing tag.

(2) Name of person placing the tag and how that person may be contacted.

(3) Date tag was placed.

2530.43. Automatic Restarting.

A motor-running overload device that can restart a motor automatically after overload tripping shall not be installed unless approved for use with the motor it protects. A motor that can restart automatically after shutdown shall not be installed if its automatic restarting can result in injury to persons.

(Title 24, Part 3, Section 430-43.)

2530.86. Motor Not in Sight from Controller.

(a) If a motor and the driven machinery are not in sight from the controller location, the installation shall comply with one of the following

conditions:

(1) The controller disconnecting means shall be capable of being locked in the open position.

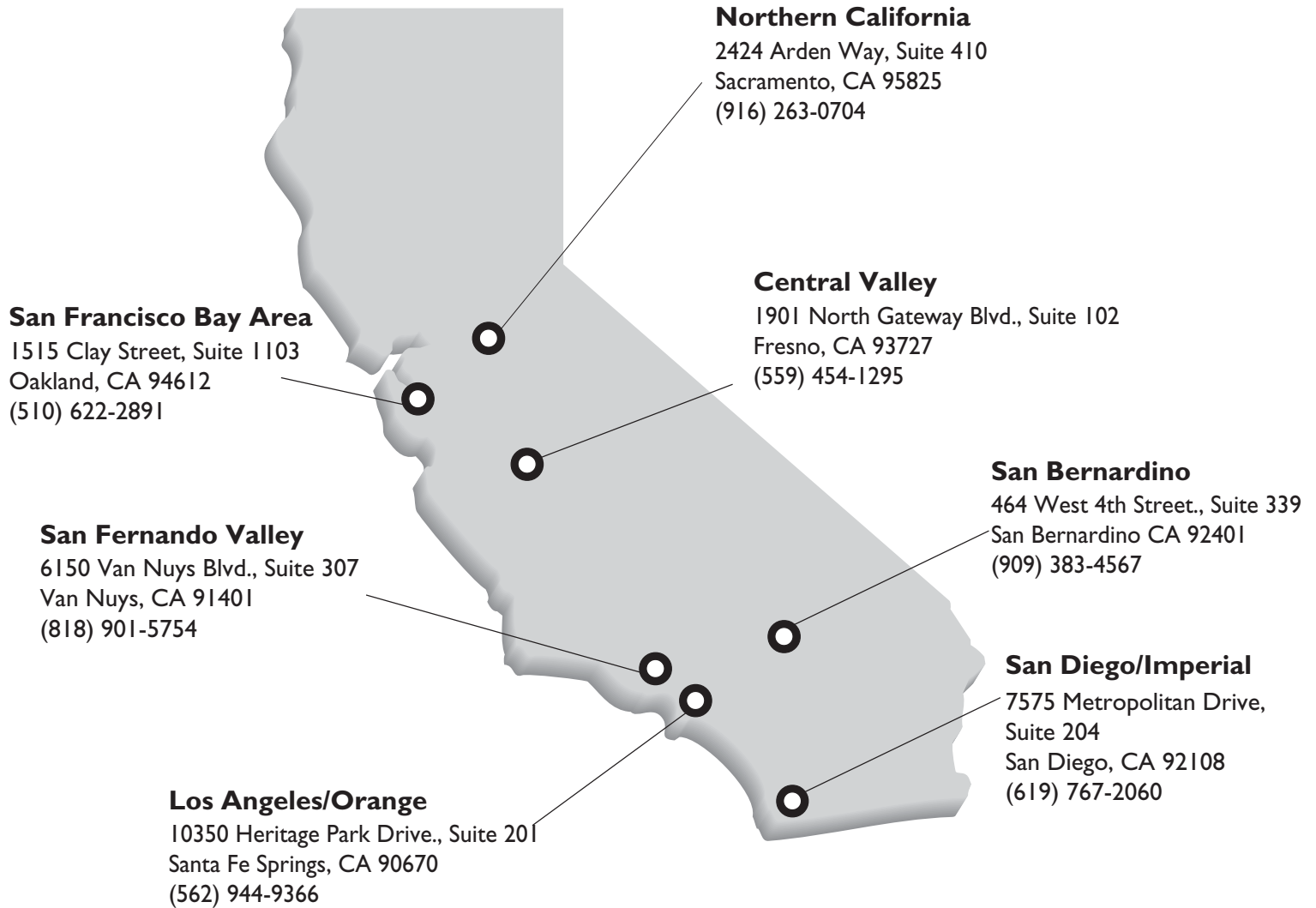
(2) A manually operable switch that will disconnect the motor from its source of supply shall be placed in sight from the motor location.
(Title 24, Part 3, Section 430-86.)

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**7. Model Injury and Illness Prevention Plan
Seasonal Workers**

**MODEL
INJURY AND ILLNESS
PREVENTION PROGRAM
FOR
EMPLOYERS WITH
INTERMITTENT WORKERS**

ABOUT THIS MODEL PROGRAM

Every California employer must establish, implement and maintain a written Injury and Illness Prevention (IIP) Program and a copy must be maintained at each workplace or at a central worksite if the employer has non-fixed worksites. The requirements for establishing, implementing and maintaining an effective written Injury and Illness Prevention Program are contained in Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203) and consist of the following eight elements:

- Responsibility
- Compliance
- Communication
- Hazard Assessment
- Accident/Exposure Investigation
- Hazard Correction
- Training and Instruction
- Recordkeeping

This model program has been prepared for use by employers in industries which have been determined by Cal/OSHA to historically utilize intermittent or seasonal employees. Intermittent or seasonal employment refers to controlling, directing, or directly supervising any worker other than permanent workers. You are not required to use this program. However, any employer in an industry which has been determined by Cal/OSHA as historically utilizing intermittent or seasonal workers and who adopts and implements this model program in good faith shall be deemed in compliance with IIP Program requirements.

Proper use of this model program requires the IIP Program administrator of your establishment to carefully review the requirements for each of the eight IIP Program elements found in this model program, fill in the appropriate blank spaces and check those items that are applicable to your workplace. The recordkeeping section requires that the IIP Program administrator select and implement the category appropriate for your establishment. Sample forms for hazard assessment and correction, accident/exposure investigation, and worker training and instruction are provided with this model program.

This model program must be maintained by the employer in order to be effective.

RESPONSIBILITY

The Injury and Illness Prevention Program (IIP Program) administrator,

Program Administrator

has the authority and the responsibility for implementing and maintaining this IIP Program for

Establishment Name

Managers and supervisors are responsible for implementing and maintaining the IIP Program in their work areas and for answering worker questions about the IIP Program. A copy of this IIP Program is available from each manager and supervisor.

COMPLIANCE

All permanent and intermittent workers, including managers and supervisors, are responsible for complying with safe and healthful work practices. Our system of ensuring that all workers comply with these practices include one or more of the following checked practices:

- Informing workers of the provisions of our IIP Program.
- Evaluating the safety performance of all workers.
- Recognizing employees who perform safe and healthful work practices.
- Providing training to workers whose safety performance is deficient.
- Disciplining workers for failure to comply with safe and healthful work practices.

COMMUNICATION

All managers and supervisors are responsible for communicating with all permanent and intermittent workers about occupational safety and health in a form readily understandable by all workers. Our communication system encourages all workers to inform their managers and supervisors about workplace hazards without fear of reprisal.

Upon hiring, management will identify any intermittent workers with special communication needs. Management will ensure that such a worker understands the safety and health requirements before being assigned to duties exposing them to workplace hazards.

Our communication system includes one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
- Review of our IIP Program.
- Workplace safety and health training programs.
- Regularly scheduled safety meetings.
- Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate.
- Posted or distributed safety information.
- A system for workers to anonymously inform management about workplace hazards.
- Our establishment has less than ten employees and communicates with and instructs employees orally about general safe work practices and with respect to hazards unique to each employee's job assignment.

HAZARD ASSESSMENT

Periodic inspections to identify and evaluate workplace hazards shall be performed by a competent observer in the following areas of our workplace:

Periodic inspections are performed according to the following schedule:

1. When we initially established our IIP Program;
2. When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
3. When new, previously unidentified hazards are recognized;
4. When occupational injuries and illnesses occur;
5. When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and
6. Whenever workplace conditions warrant an inspection.

Periodic inspections consist of identification and evaluation of workplace hazards utilizing applicable sections of the attached Hazard Assessment Checklist and any other effective methods to identify and evaluate workplace hazards.

ACCIDENT/EXPOSURE INVESTIGATIONS

Procedures for investigating workplace accidents and hazardous substance exposures include:

1. Interviewing injured workers and witnesses;
2. Examining the workplace for factors associated with the accident/exposure;
3. Determining the cause of the accident/exposure;
4. Taking corrective action to prevent the accident/exposure from reoccurring; and
5. Recording the findings and corrective actions taken.

HAZARD CORRECTION

Unsafe or unhealthy work conditions, practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

1. When observed or discovered; and
2. When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection.

TRAINING AND INSTRUCTION

All permanent and intermittent workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction can be provided through a brief on-site safety meeting. Any training and instruction shall be provided as follows:

1. When the IIP Program is first established;
2. To all new workers, except for construction workers who are provided training through a construction industry occupational safety and health training program approved by Cal/OSHA;
3. To all workers given new job assignments for which training has not previously provided;
4. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
5. Whenever the employer is made aware of a new or previously unrecognized hazard;
6. To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
7. To all workers with respect to hazards specific to each employee's job assignment.

Workplace safety and health practices for all industries using intermittent workers include, but are not limited to, the following:

1. Explanation of the employer's IIP Program, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.
2. Use of appropriate clothing, including gloves, footwear, and personal protective equipment.
3. Prevention of musculoskeletal disorders, including proper lifting techniques.
4. Information about chemical hazards to which employees could be exposed and other hazard communication program information.
5. Availability of toilet, hand-washing and drinking water facilities.
6. Provisions for medical services and first aid including emergency procedures.

In addition, we train all workers about the checked applicable items found in the attached List of Training Subjects.

RECORDKEEPING

We have checked one of the following categories as our recordkeeping policy.

_____ **Category 1. Our establishment has twenty or more workers; has a workers' compensation modification rate of greater than 1.1 and is not on a designated low hazard industry list; or, is on a designated high hazard industry list. We have taken the following steps to implement and maintain our IIP Program:**

- 1. Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form; and**
- 2. Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of training, and training providers are recorded on a worker training and instruction form. We also include the records relating to worker training provided by a construction industry occupational safety and health program approved by Cal/OSHA.**

Inspection records and training documentation will be maintained according to the following checked schedule:

_____ **For one year, except for training records of employees who have worked for less than one year which are provided to the worker upon termination of employment; or**

_____ **Since we have less than ten workers, including managers and supervisors, we only maintain inspection records until the hazard is corrected and only maintain a log of instructions to workers with respect to worker job assignments when they are first hired or assigned new duties.**

_____ **Category 2. Our establishment has fewer than twenty workers and is not on a designated high hazard industry list. We are also on a designated low hazard industry list or have a workers' compensation experience modification rate of 1.1 or less, and have taken the following steps to implement and maintain our IIP Program:**

- 1. Records of hazard assessment inspections; and**
- 2. Documentation of safety and health training for each worker.**

Inspection records and training documentation will be maintained according to the following checked schedule:

_____ **For one year, except for training records of employees who have worked for less than one year which are provided to the employee upon termination of employment; or**

_____ **Since we have less than ten workers, including managers and supervisors, we maintain inspection records only until the hazard is corrected and only maintain a log of instructions to workers with respect to worker job assignments when they re first hired or assigned new duties.**

_____ **Category 3. We are a local governmental entity (any county, city, or district, and any public or quasi-public corporation or public agency therein) and we are not required to keep written records of the steps taken to implement and maintain our IIP Program.**

LIST OF TRAINING SUBJECTS

We train our workers about the following checked training subjects:

AGRICULTURE PRODUCTION AND FARM LABOR AND MANAGEMENT SERVICES

(SIC Codes: 0111-0119, 0131-0139, 0161, 0171-0179, 0191, 0721-0724, 0761-0762)

- Safe practices for operating any agricultural equipment, including procedures for cleaning, repairing, servicing and adjusting.
 - Electrical hazards.
 - Heat stress.
 - Ergonomic hazards, including proper lifting techniques and working on ladders or in a stooped posture for prolonged periods at one time.
 - Hazardous chemical exposures.
 - Other job-specific hazards, such as _____
-
-

HEAVY CONSTRUCTION AND SPECIAL TRADES CONTRACTORS

(SIC Codes: 1611, 1721, 1751-1755, 1761, 1771)

- The employer's Code of Safe Practices.
 - Good housekeeping, fire prevention, safe practices for operating any construction equipment, including procedures for cleaning, repairing, servicing and adjusting.
 - Safe access to working areas.
 - Protection from falls.
 - Electrical hazards, including working around high voltage lines.
 - Crane operations.
 - Trenching and excavation work.
 - Proper use of powered tools.
 - Ergonomic hazards, including proper lifting techniques.
 - Other job-specific hazards, such as _____
-
-

PRESERVED FRUITS AND VEGETABLES MANUFACTURING AND SUGAR AND CONFECTIONERY PRODUCTS

(SIC Codes: 2032-2038, 2061-2068)

- Guarding of belts and pulleys, gears and sprockets, and conveyor nip points.
 - Machine, machine parts, and prime movers guarding.
 - Lock-out/tag-out procedures.
 - Materials handling.
 - Ergonomic hazards, including proper lifting techniques.
 - Noise.
 - Other job-specific hazards, such as _____
-
-

GENERAL MERCHANDISE, FOOD AND APPAREL STORES AND PHOTOGRAPHIC AND TAX PREPARATION(SIC Codes: 5311, 5399, 5441, 5499, 5632, 5651, 7221, 7291)

- Ergonomic hazards, including proper lifting techniques.
 - Materials handling.
 - Other job-specific hazards, such as _____
-
-

LOGGING
(SIC Code: 2411)

- _____ Chainsaw and other power tool operation.
 - _____ Tree falling/bucking procedures and precautions, including procedures for recognizing and working with hazard trees, snags, lodged trees, and unsafe weather conditions.
 - _____ Yarding operations, including skidding, running lines, unstable or rolling logs, use of rigging and communication.
 - _____ Landing and loading areas, including release of rigging, landing layout, moving vehicles and equipment, and log truck locating, loading and wrapping.
 - _____ Ergonomic hazards, including proper lifting techniques.
 - _____ Other job-specific hazards, such as _____
-
-

**MOTION PICTURE PRODUCTION AND SERVICES
AND THEATRICAL PRODUCERS**
(SIC Codes: 7812-7819, 7922-7929)

- _____ Fall protection from elevated locations.
 - _____ Use of elevated platforms, including condors and scissor lifts.
 - _____ Electrical safety.
 - _____ Safe use of explosives.
 - _____ Slips, falls, and back injuries.
 - _____ Noise.
 - _____ Ergonomic hazards, including proper lifting techniques.
 - _____ Other job-specific hazards, such as _____
-
-

**RECREATIONAL PARKS AND CAMPS AND
AMUSEMENT AND RECREATION SERVICES**
(SIC Codes: 7032-7033, 7941-7948, 7996, 7999)

- _____ Design, maintenance, operation, repair, inspection, assembly and disassembly of amusement rides or sports equipment.
 - _____ Electrical hazards.
 - _____ Bloodborne pathogens (for medical personnel and first aid providers.)
 - _____ Ergonomic hazards, including proper lifting techniques.
 - _____ Other job-specific hazards, such as _____
-
-

**SCHOOL BUSES, SCHOOLS, COLLEGES AND UNIVERSITIES
AND JOB TRAINING AND RELATED SERVICES**
(SIC Codes: 4151, 8211, 8221-8222, 8331)

- _____ Driver safety.
 - _____ Hazard communication.
 - _____ Laboratory safety.
 - _____ Bloodborne pathogens (for medical personnel and first aid providers.)
 - _____ Ergonomic hazards, including proper lifting techniques.
 - _____ Other job-specific hazards, such as _____
-
-

HAZARD ASSESSMENT CHECKLISTS

The following checklists contain safety and health hazard assessment items commonly found in the workplace. It is the employer's responsibility to identify, evaluate and control job-specific safety and health hazards in the workplace, and to meet all applicable Cal/OSHA requirements.

The following checklists are to be used as guides in identifying safety and health hazards in your workplace. Answer the questions contained in the General Workplace checklist and then identify and answer the questions contained in the checklist that applies to your specific industry.

GENERAL WORKPLACE

(SIC Codes: All)

- | | |
|---|---|
| <input type="checkbox"/> Is the Cal/OSHA poster Safety and Health Protection on the Job displayed in a prominent location where all employees are likely to see it? | <input type="checkbox"/> sanitary? |
| <input type="checkbox"/> Do you have a written, effective Injury and Illness Prevention Program? | <input type="checkbox"/> Are employees instructed in the proper manner of lifting heavy objects? |
| <input type="checkbox"/> Are all work areas properly illuminated? | <input type="checkbox"/> Is there a list of hazardous substances used in your workplace? |
| <input type="checkbox"/> Are employees instructed in proper first aid and other emergency procedures? | <input type="checkbox"/> Is there a written hazard communication program dealing with Material Safety Data Sheets (MSDS) labeling, and employee training? |
| <input type="checkbox"/> Do you have a fire prevention plan? | <input type="checkbox"/> Is each container for a hazardous substance (i.e. vats, bottles, storage tanks,) labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)? |
| <input type="checkbox"/> Are all worksites clean and orderly? | <input type="checkbox"/> Is there a Material Safety Data Sheet readily available for each hazardous substance used? |
| <input type="checkbox"/> Are all spilled materials or liquids cleaned up immediately? | <input type="checkbox"/> Is there an employee training program for hazardous substances? |
| <input type="checkbox"/> Do you have eye wash facilities and a quick drench shower within the work area where employees are exposed to injurious corrosive materials? | <input type="checkbox"/> Can the work be performed without eye strain or glare to the employees? |
| <input type="checkbox"/> When lunches are eaten on the premises, are they eaten in areas where there is no exposure to toxic materials or other health hazards? | <input type="checkbox"/> Does the task require prolonged raising of the arms and does the neck and shoulders have to be stooped to view the task? |
| <input type="checkbox"/> Are aisles and passageways kept clear? | <input type="checkbox"/> Are there pressure points on any parts of the body (wrists, forearms, back of thighs)? |
| <input type="checkbox"/> Are the directions to exits, when not immediately apparent, marked with visible signs? | <input type="checkbox"/> Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks? |
| <input type="checkbox"/> Are hazardous substances identified which may cause harm by inhalation, ingestion, skin absorption or contact? | <input type="checkbox"/> Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably? |
| <input type="checkbox"/> Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, caustics? | <input type="checkbox"/> Are you keeping the required records and documentation? |
| <input type="checkbox"/> Is personal protective equipment provided, used and maintained wherever required? | <input type="checkbox"/> Have arrangements been made to maintain required records for the legal period of time? |
| <input type="checkbox"/> Are there written standard operating procedures for the selection and use of respirators where needed? | |
| <input type="checkbox"/> Are restrooms and washrooms kept clean and | |

HAZARD ASSESSMENT CHECKLISTS

AGRICULTURE PRODUCTION AND FARM LABOR AND MANAGEMENT SERVICES

(SIC Codes: 0111-0119, 0131-0139, 0161, 0171-0179, 0191, 0721-0724, 0761-0762)

- ☞ Where workers do not understand English, are safety instructions and warnings presented in a language the workers understand?
- ☞ Are adequate first-aid materials are immediately available at the farm headquarters and/or on worker transportation buses?
- ☞ At remote locations, are provisions made in advance for prompt medical attention and are there is there at least 1 employee for every 20 employees trained for the administering of first aid?
- ☞ Is all agricultural equipment is properly guarded to prevent accidental contact by workers?
- ☞ Are safe practices for operating agricultural equipment, including procedures for cleaning, repairing, servicing and adjusting, being followed?
- ☞ Is all machinery or equipment capable of movement, required to be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required?
- ☞ Are safe work practices being followed during operation of self-propelled equipment?
- ☞ Where mobile farm equipment is towed by a tractor or truck and the tractor or truck driver cannot see the employees on the towed equipment, is there a positive signaling device installed on the towed equipment that can stop the towing equipment in case of an emergency?
- ☞ Are portable screw conveyors located seven feet or less above the work level substantially covered or guarded?
- ☞ Are augers guarded with either grating type guards or solid baffle style covers according to Cal/OSHA section 3446?
- ☞ Are ladders, steps, or other suitable climbing means provided where and when workers are required to work in or about farm structures such as permanent pools, ponds, water tanks, or reservoirs 4 feet or more in actual depth and where the slope and construction would make exit difficult?
- ☞ Are machines, aircraft, or applicators decontaminated in a safe area before they are overhauled or placed in storage?
- ☞ Are safety precautions as required by Title 3, Article 23 of the California Code of Regulations followed when using aircraft for crop dusting and spraying?
- ☞ Are safe work practices followed when using applicator rigs, tanks, and vessels containing fertilizer, insecticide, pesticide, and other chemical solutions of a hazardous nature?
- ☞ Is potable water provided, and access to permitted, at all times, during working hours and placed in locations readily accessible to all workers?
- ☞ Is potable water for drinking dispensed in single-use drinking cups or by fountains, and the water is fresh, pure, and suitably cool?
- ☞ Are adequate toilet and handwashing facilities available and do they meet Cal/OSHA section 3457 requirements?
- ☞ Are all ladders maintained in good condition, and are employees instructed to face the ladder when ascending or descending and prohibited from using ladders that are broken, missing steps, rungs, or cleats, broken side rails or other faulty equipment?
- ☞ Are employees instructed not to use the top 2 steps of ordinary stepladders as a step?
- ☞ Are employees made aware of the hazards caused by faulty or improperly used hand tools?
- ☞ Is each van, bus or truck used regularly to transport employees, equipped with an adequate number of seats, and equipped with the proper safety devices?
- ☞ Can the work be done without twisting or overly bending the lower back?
- ☞ Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks?
- ☞ Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- ☞ Are hazardous substances identified which may cause harm by inhalation, ingestion, skin absorption or contact?
- ☞ Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, and caustics?
- ☞ Is heat stress being evaluated and controlled?
- ☞ Are employees screened before assignment to areas of high heat to determine if their health condition might make them more susceptible to having an adverse reaction?

HAZARD ASSESSMENT CHECKLISTS

HEAVY CONSTRUCTION AND SPECIAL TRADES CONTRACTORS

(SIC Codes: 1611, 1721, 1751-1755, 1761, 1771)

- ☞ Are workers knowledgeable about and complying with the employer's Code of Safe Practices.
- ☞ Are safe practices for operating construction equipment, including procedures for cleaning, repairing, servicing and adjusting, being followed?.
- ☞ Is good housekeeping maintained in all work areas, passageways, and stairs in and around buildings or other structures?
- ☞ Are all personal protective devices maintained in a safe, sanitary condition, and in accordance with manufacturer's instructions?
- ☞ Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?
- ☞ Are hard hats provided and worn where danger of falling objects exists?
- ☞ Are hard hats inspected periodically for damage to the shell and suspension system?
- ☞ Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions?
- ☞ Are all applicable safety precautions, practices, being used prior to and during entry into any excavation?
- ☞ Are appropriate protective devices utilized where applicable in the excavation?
- ☞ Are competent and qualified personnel used when blasting is required?
- ☞ Are workers protected from electrical hazards?
- ☞ Are the minimum number of toilets and washing facilities provided and are they clean and sanitary?
- ☞ Are portable metal ladders legibly marked with signs reading "CAUTION" "Do Not Use Around Electrical Equipment" or equivalent wording?
- ☞ Are all ladders maintained in good condition, and are employees instructed to face the ladder when ascending or descending and not to use the top 2 steps of ordinary stepladders as a step?
- ☞ Are employees prohibited from using ladders that are broken, missing steps, rungs, or cleats, broken side rails or other faulty equipment?
- ☞ Are floor openings guarded by a standard railing and toeboards or cover?
- ☞ Are elevator shafts in which cages are not installed and which are not enclosed with solid partitions and doors guarded on all open sides by standard railings and toeboards?
- ☞ Are workers adequately protected when working on temporary floors?
- ☞ Are scaffolds provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders?
- ☞ When scaffolds are used, are they properly constructed in accordance with Cal/OSHA Article 22?
- ☞ When work is performed from thrustouts or similar locations, such as trusses, beams purlins, or plates of 4-inch nominal width, or greater, at elevations exceeding 15 feet above ground, water surface, or floor level below and where temporary guardrail protection is impracticable, are employees using approved safety belts or harnesses with attached lanyards?
- ☞ Are all tools and equipment (both, company and employee-owned) used by employees at their workplace in good condition?
- ☞ Are power tools used with the correct shield, guard or attachment recommended by the manufacturer, portable circular saws equipped with guards above and below the base shoe and checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?
- ☞ Are all cord-connected, electrically-operated tools and equipment effectively grounded or of the approved double insulated type?
- ☞ Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?
- ☞ Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?
- ☞ If cranes are used are they visually inspected for defective components prior to the beginning of any work shift and is a preventive maintenance program established?
- ☞ Are cranes of such design, that the boom could fall over backward, equipped with boomstops?

HAZARD ASSESSMENT CHECKLISTS

PRESERVED FRUITS AND VEGETABLES MANUFACTURING AND SUGAR AND CONFECTIONERY PRODUCTS

(SIC Codes: 2032-2038, 2061-2068)

- ☞ Is sufficient clearance provided around and between machines to allow for safe operations, set up and servicing, material handling and waste removal and is there a power shut-off switch within reach of the operator's position at each machine?
- ☞ Are all pulleys and belts, moving chains and gears and conveyor nip points that are within 7 feet of the floor or working level properly guarded ?
- ☞ Are revolving drums, barrels and containers required to be guarded by an enclosure that is interlocked with the drive mechanism, so that revolution cannot occur unless the guard enclosure is in place, so guarded?
- ☞ Is all machinery or equipment capable of movement, required to be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required?
- ☞ Does the lock-out procedure require that stored energy (i.e. mechanical, hydraulic, air,) be released or blocked before equipment is locked-out for repairs?
- ☞ Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?
- ☞ Are only trained personnel allowed to operate industrial trucks and does each industrial truck have a warning horn, whistle, gong, or other device which can be clearly heard above the normal noise in the area where operated?
- ☞ Before entering a confined space, are all appropriate tests conducted, precautions observed, permits obtained, and work practices followed?
- ☞ Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment?
- ☞ Can the work be done without twisting or overly bending the lower back?
- ☞ Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks?
- ☞ Are there areas in the workplace where continuous noise levels exceed 85 dBA and if so, are engineering controls being considered to reduce the noise and/or is a hearing conservation program in effect?

GENERAL MERCHANDISE, FOOD AND APPAREL STORES AND PHOTOGRAPHIC AND TAX PREPARATION

(SIC Codes: 5311, 5399, 5441, 5499, 5632, 5651, 7221, 7291)

- ☞ Does the task require prolonged raising of the arms?
- ☞ Do the neck and shoulders have to be stooped to view the task?
- ☞ Can the work be done without twisting or overly bending the lower back?
- ☞ Are there sufficient rest breaks, in addition to the regular rest breaks, to relieve stress from repetitive-motion tasks?
- ☞ Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- ☞ Are all pieces of furniture adjusted, positioned and arranged to minimize strain on all parts of the body?
- ☞ Are there pressure points on any parts of the body (wrists, forearms, back of thighs)?
- ☞ Are motorized vehicles and mechanized equipment inspected daily or prior to use?
- ☞ Are hand trucks maintained in safe operating condition?
- ☞ Are materials stacked or stored in a manner to prevent tipping or falling?
- ☞ Are aisles and passageways kept clear?
- ☞ Are spilled materials cleaned up immediately?
- ☞ Do employees complain about dizziness, headaches, nausea, irritation or other factors of discomfort when they use solvents or other chemicals?
- ☞ Is there a dermatitis problem - do employees complain about skin dryness, irritation, or sensitization?
- ☞ Are electrical appliances such as vacuum cleaners, polishers, vending machines grounded?
- ☞ Do extension cords being used have a grounding conductor?
- ☞ Are multiple plug adaptors prohibited?
- ☞ Are flexible cords and cables free of splices or taps?

HAZARD ASSESSMENT CHECKLISTS

LOGGING

(SIC Code 2411)

- ☞ Has first aid, communication and transportation been provided for?
- ☞ Do all employees have appropriate personal protective equipment?
- ☞ Is all equipment, including rigging, prime movers, winches, chain saws, and hand tools, inspected, maintained and safely operated?
- ☞ Are required distances maintained between falling, bucking, and other operations?
- ☞ When falling, are fallers located so that they will not endanger other employees?
- ☞ Are suitable warning signs or other controls provided where needed to prevent foot or vehicle traffic from entering danger areas?
- ☞ Are tree falling/bucking procedures and precautions, including procedures for recognizing and working with hazard trees, snags, lodged trees, being followed?
- ☞ Are yarding operations using effective communication systems, and are safe procedures being followed in setting and unhooking chokers?
- ☞ Are landing and loading operations, including release of rigging, landing layout, moving vehicles and equipment, and log truck locating, loading and wrapping, being safely performed by workers?
- ☞ Are landings of adequate size for the operations, properly prepared and laid out, and reasonably clear of debris?
- ☞ Are all logs stable on landings and decks?
- ☞ Is mobile equipment in suitable condition and provided with seat belts, backup alarms where required?
- ☞ Do tractors have suitable roll-over protection, canopies, and Jill-Poke protection?
- ☞ Is the yarder rigging, butt-rigging, guylines, and stumps being properly inspected, maintained and used?
- ☞ Are approved containers and tanks used for the storage and handling of flammable liquids?
- ☞ Is the transfer/withdrawal of flammable or combustible liquids performed by trained personnel?
- ☞ Are all tools and equipment (both company and employee-owned) used by employees at their workplace in good condition?

MOTION PICTURE PRODUCTION AND SERVICES AND THEATRICAL PRODUCERS

(SIC Codes: 7812-7819, 7922-7929)

- ☞ Are workers protected against accidental falls from elevated locations?
- ☞ Is the use of elevated platforms, including condors and scissors lifts, in accordance with safety regulations?
- ☞ Is the use of pyrotechnics in accordance with safe work practices?
- ☞ Are only authorized personnel allowed to handle pyrotechnic devices and material?
- ☞ Are work areas free from slipping, tripping, and falling hazards?
- ☞ Are your workplace electricians familiar with the Cal/OSHA Electrical Safety Orders?
- ☞ Do extension cords have a grounding conductor?
- ☞ Are all temporary circuits protected by suitable disconnecting switches or plug connectors at the junction with permanent wiring?
- ☞ Is exposed wiring and cords with frayed or deteriorated insulation repaired or replaced promptly?
- ☞ Is sufficient access and working space provided and maintained about all electrical equipment to permit ready and safe operations and maintenance?
- ☞ Are workers trained in proper lifting techniques?
- ☞ Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?
- ☞ Is there safe clearance for equipment through aisles and doorways?
- ☞ Are employees trained in the use of fire extinguisher?
- ☞ Are there areas in the workplace where noise levels may exceed the permissible exposure limits?
- ☞ Is approved hearing protective equipment available to employees exposed to excessive noise levels?
- ☞ Are combustible scrap, debris and waste materials (i.e. oily rags) stored in covered metal receptacles and removed from the worksite promptly?
- ☞ If internal combustion engines are used, is carbon monoxide kept within acceptable levels?

HAZARD ASSESSMENT CHECKLISTS

RECREATIONAL AND AMUSEMENT PARKS AND CAMPS AND RECREATION SERVICES

(SIC Codes: 7032-7033, 7941-7948, 7996, 7999)

- ☞ Do amusement rides have the required testing, emergency brakes, anti-rollback devices, and speed limiting devices?
- ☞ Is the amusement ride inspected and maintained each day before use?
- ☞ Do only authorized persons perform or supervise the assembly or disassembly of amusement rides?
- ☞ Are your workplace electricians familiar with the Cal/OSHA Electrical Safety Orders?
- ☞ Are employees instructed to make preliminary inspections and/or appropriate tests to determine what conditions exist before starting work on electrical equipment or lines?
- ☞ Do extension cords being used have a grounding conductor?
- ☞ Are all temporary circuits protected by suitable disconnecting switches or plug connectors at the junction with permanent wiring?
- ☞ Are flexible cords and cables free of splices or taps?
- ☞ Are employees providing first-aid or medical services trained in infection control procedures?
- ☞ Is personal protective equipment provided to employees, and in all appropriate locations?
- ☞ Has medical surveillance including HBV evaluation, antibody testing and vaccination been made available to potentially exposed employees?
- ☞ Are there pressure points on any parts of the body (wrists, forearms, back or thighs)?
- ☞ Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- ☞ Are employees instructed in proper lifting techniques?
- ☞ Have emergency escape procedures and routes been developed and communicated to all employees?
- ☞ Are all work areas properly illuminated?
- ☞ Are all toilets and washing facilities clean and sanitary?
- ☞ Are employees trained in the safe handling practices of hazardous chemicals?

SCHOOL BUSES, SCHOOLS, COLLEGES AND UNIVERSITIES AND JOB TRAINING AND RELATED SERVICES

(SIC Codes: 4151, 8211, 8221-8222, 8331)

- ☞ Are employees who operate vehicles on public thoroughfares instructed in safe driving practices?
- ☞ Is there a list of hazardous substances used in your workplace?
- ☞ Is each container for a hazardous substance labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)?
- ☞ Is there an employee training program for hazardous substances?
- ☞ Are incompatible laboratory chemicals separated in storage?
- ☞ Have standard operating procedures been established and are they being followed when cleaning up chemical spills?
- ☞ Is a Chemical Hygiene Plan developed and implemented?
- ☞ Are employees providing first-aid or medical services trained in infection control procedures?
- ☞ Is personal protective equipment provided to employees, and in all appropriate locations?
- ☞ Have infection control procedures been instituted where appropriate, such as ventilation, universal precautions, workplace practices, personal protective equipment?
- ☞ Has medical surveillance including HBV evaluation, antibody testing and vaccination been made available to potentially exposed employees?
- ☞ Are all pieces of furniture adjusted, positioned and arranged to minimize strain on all parts of the body?
- ☞ Can the work be performed without eye strain or glare to the employees?
- ☞ Are tools, instruments and machinery shaped, positioned and handled so that tasks can be performed comfortably?
- ☞ Do employees complain about dizziness, headaches, nausea, irritation or other factors of discomfort when they use solvents or other chemicals?
- ☞ Is there is dermatitis problem - do employees complain about skin dryness, irritation, or sensitization?for work being performed?

HAZARD ASSESSMENT AND CORRECTION RECORD

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

Date of Inspection:

Person Conducting Inspection:

Unsafe Condition or Work Practice:

Corrective Action Taken:

ACCIDENT/EXPOSURE INVESTIGATION REPORT

Date & Time of Accident:

Location:

Accident Description:

Employees Involved:

Preventive Action Recommendations:

Corrective Actions Taken:

Manager Responsible:

Date Completed:

Cal/OSHA Consultation Programs

Toll-free number: 1-800-963-9424 • Internet: www.dir.ca.gov

On-site Assistance Program Area Offices



Your call will in no way trigger an inspection by Cal/OSHA enforcement.

- **Voluntary Protection Program**

San Francisco, CA 94142
(415) 703-5272

- **Research and Education Unit**

Sacramento, CA 95825
(916) 574-2528



8. Ergonomic Guidance for Materials Handling

ERGONOMIC SURVIVAL GUIDE FOR **LABORERS**

This SURVIVAL GUIDE is designed to promote awareness of safe work practices for LABORERS.

To order this guide and other trade-specific publications, please call 1-800-963-9424 or download a pdf or html version from our Web site.

<http://www.dir.ca.gov/dosh/puborder.asp>



What will happen to your family and your lifestyle if you get injured and can't work?
What will you lose if you get injured?

- **Your salary**
- **Your quality of life**
- **Your job advancement**
- **Future opportunities**

WHAT CAN YOU DO TO AVOID AN INJURY?

What can Make You Hurt?

There are certain things in your job that can lead to fatigue, discomfort, or pain when you do them **repeatedly or without breaks.**

These include:

- Exerting force to perform a task or to use a tool.
- Working in positions such as bending, stooping, twisting, and overhead reaching.
- Using awkward back, hand, wrist, elbow, or shoulder postures.
- Remaining in the same position for a long time with little or no movement.
- Continuous pressure from a hard surface or edge on any part of the body.
- Working in very hot or very cold temperatures produced by climate, equipment, or machines.
- Sitting on, standing on, or holding equipment or tools that vibrate.

In addition, stressful work situations can increase muscle tension and reduce awareness of proper work technique.

Most common injuries:

- Back
- Fingers/Hands
- Knees

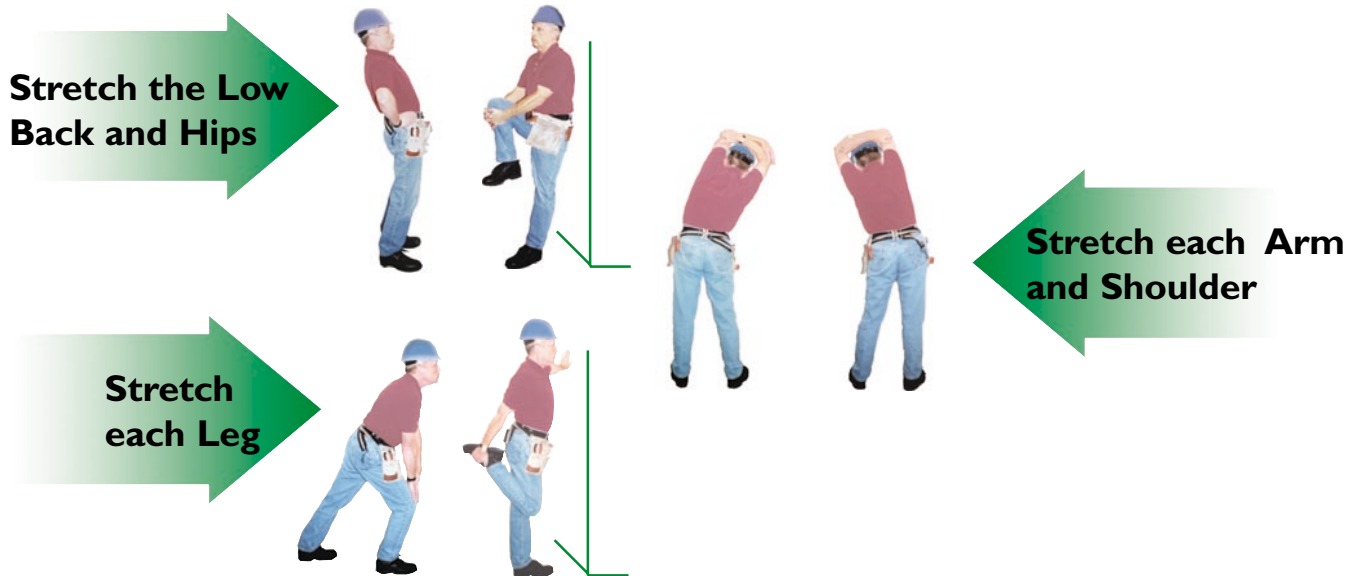


Prepare Yourself for Work

Just as a runner prepares for a race event by warming up, prepare for work by warming up and stretching. Warm up by walking, marching in place, or moving your arms in circles. Once your muscles are warm:

- Stretch S-L-O-W-L-Y and hold each stretch 3-5 seconds.
- Stretch a few minutes before and during your workday.

Caution: Check with your doctor before exercising. If you feel discomfort while exercising, stop immediately!



While you are off work, keep yourself physically ready for returning to work, whether it's the next day or later.

Be Aware

If you experience symptoms, you must change the way you work or the tools you use. If you don't change, your symptoms may get worse and may keep you from working at all.

You may have a problem if you have any of these symptoms:

- Constant fatigue
- Cold hands
- Swelling
- Numbness
- Tingling
- Lack of energy
- Changes in skin color
- Weakness
- Loss of sensation
- Aching, burning, or shooting pain

Where?

- Back
- Neck
- Hands
- Fingers
- Shoulders
- Arms
- Knees

If you develop any symptoms:

- Talk with your foreman about your symptoms right away.
- Work with your foreman to identify the cause of the problem.
- Follow your company's ergonomics program and its Injury and Illness Prevention Program.
- Always look for better ways to do your job.

A TYPICAL WAY

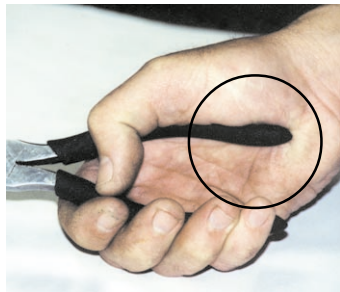
A SAFER WAY



Twisting the body while lifting a shovel may injure the joints and muscles in your shoulders, elbows, wrists, and back. It may keep you from ever working again.

Here are ways to minimize twisting while shoveling:

- When lifting, put your weight on your front foot.
- Before throwing, shift your weight to your rear foot.
- When throwing, turn your front foot in the direction of the throw.



Using a short handled tool puts direct pressure on the palm of your hand. Over time you may feel numbness and weakness in your hand when using a short-handled tool.

- Using a tool that has a longer handle spreads the pressure over a larger area of your hand.



Working in an awkward posture, such as bending, for a long time, may tire you and strain your muscles, reducing your productivity throughout the day.

- Change postures so that you do not stay in the same position for a long time.
- Stand and stretch to reduce the effects of bending.
- Work at different job tasks whenever possible.

Make It Easy on Yourself

PROTECT YOURSELF.

Use padding to protect yourself from hard, sharp edges that put pressure on your body. Wear eye protection, gloves, a hard hat, safety shoes, and other personal protective equipment (PPE) when necessary. Choose PPE that fits and is appropriate for the task.



PRACTICE GOOD HOUSEKEEPING.

Pick up debris and scrap material to prevent slips, trips and falls. Good housekeeping allows you to get closer to your work. Keep pathways clear for carts, wheelbarrows, and dollies.

POSITION YOURSELF.

Face your work directly to prevent twisting, reaching, or bending. This technique can increase your comfort level and improve your work accuracy and quality.



USE A MORE COMFORTABLE HANDLE.

When lifting a bucket, you will use less grip force if you increase the diameter of the handle by adding padding, or by using a handle that has a bigger diameter.

Lifting Tips

- Use teamwork and mechanical aids whenever possible.

General Lifting tips:

- Face the load.
- Bend your knees and keep your back straight.
- Bring the load close to your body.
- Breathe out and tighten your stomach as you lift.

3-point lifting tips:

- Use a 3-point lift when handling plank or sheet material by yourself.

1 Squat



2 Tilt on end



3 Lift



KEEP THE LOAD OR TOOL CLOSE TO YOUR BODY



Reaching and lifting, or carrying a **10 pound** object that is **25 inches** from your spine is equal to **250 pounds** of force on your lower back.

Reaching and lifting, or carrying a **10 pound** object that is **10 inches** from your spine is equal to **100 pounds** of force on your lower back.



Cal/OSHA CONSULTATION SERVICE RESEARCH & EDUCATION UNIT

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Cal/OSHA CONSULTATION PROGRAMS

Toll-Free 1-800-963-9424

Internet – <http://www.dir.ca.gov/dosh>

Your call will in no way trigger an inspection by Cal/OSHA Enforcement.

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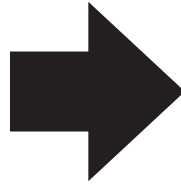
SANTA FE SPRINGS – LA. METRO AREA

(562) 944-9366

9. Indoor Heat Illness Prevention

Cal/OSHA Heat Illness Prevention for Indoor Working Environments

“5 Must-Train preventive steps”



1. Frequent drinking of water
2. Rest in cooler areas
3. Give time to acclimatize
4. Know signs and symptoms
5. Know emergency steps

Employers with employees near sources of heat or inside buildings with limited cooling capabilities must ensure that their Injury and Illness Prevention Program is effective and in writing (i.e. work areas with risk of heat illness have been identified and evaluated, and appropriate corrective measures and training have been implemented to protect workers).

Examples include foundries, ovens, dryers, boilers, warehouses without AC.

Title 8 § 3203 (Injury and Illness Prevention Program,) directs employers to address all health or safety hazards within their worksite including heat illness. Other regulations that apply include, but are not limited to: T8 § 3363 Water Supply, T8 § 3400 Medical Services and First Aid.

Cal/OSHA has created this handout to raise awareness about indoor heat illness among employers and workers with a goal of reducing the number of heat illnesses. Cal/OSHA studies reveal that heat illness and even heat fatalities can occur indoors. The studies also show effective reduction of heat illness depends on written procedures, access to water, access to cooler areas, acclimatization and weather monitoring, emergency response and employee and supervisor training.

HEAT ILLNESS PREVENTION STEPS INCLUDE:

Written Procedures:

Per T8 §3203, all preventive steps, methods and procedures used by the employer to address indoor heat illnesses must be stated in the company's Injury and Illness Prevention Program (IIPP). These written procedures must indicate how to conduct worksite evaluation, how conditions or practices will be corrected if necessary, and how information is to be communicated to workers.

Frequent Drinking of Water:

Water is a key preventive measure against heat illness. Employers need to facilitate and



encourage the frequent drinking of water, and to be on the lookout for work situations that interfere with access to water, especially during a heat wave!

Resting in Cooler Areas:

Rest breaks provide time for cooling and the opportunity to drink water. Workers must have access to rest breaks in cooled or air conditioned areas and away from the sources of heat, particularly during a heat wave!

Acclimatization and Weather Monitoring:

Acclimatization is a gradual and temporary adjustment of the body to work in the heat. People need several days to adjust when working conditions are significantly hotter than they are used to. The weather is another significant factor and requires monitoring by employers and supervisors. Institute additional water and rest breaks during a heat wave. Indoor workers face a higher risk of heat illness during periods of high temperatures, if they are working in a building that is not temperature controlled.

Being Prepared for Emergencies:

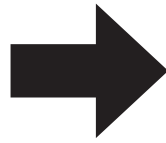
Written procedures must include steps to be followed in an emergency, which will ensure a rapid effective response, including instructing workers on how to reach 911 despite possible language barriers, how to give instructions to find the worksite and how to administer first aid while an ambulance is in route.

Employee and Supervisor Training:

All workers and supervisors need to know about the importance of frequent drinking of water and resting in cooled areas, the signs and symptoms of heat illness, how to respond and who to report to when someone feels sick and may need to go to the hospital. A Cal/OSHA heat illness study revealed that supervisor training made a significant difference in the outcome of heat illness cases: victims whose supervisors were not trained on heat illness prevention were twice as likely to die as victims whose supervisors had received training. Hence, the effectiveness of your Heat Illness Prevention Procedures depends greatly on how you train your supervisor.

Cal/OSHA Prevención de las Enfermedades Causadas por el Calor para Empleados que Trabajan Dentro de Edificios

Se Debe de Entrenar en los 5 Pasos Siguietes:



1. Beber agua frecuentemente
2. Descansar en áreas menos calurosas
3. Dar tiempo para aclimatarse
4. Reconocer signos y síntomas
5. Conocer los pasos de emergencia a seguir

Empleadores con trabajadores que operan cerca de fuentes de calor o dentro de edificios con capacidad limitada de enfriamiento, deben asegurarse que su programa de Prevención de Lesiones y Enfermedades (IIPP) es efectivo y por escrito (e.g. áreas de trabajo con riesgo de enfermedades causadas por el calor han sido identificadas y evaluadas, y que se han implementado medidas correctivas necesarias y entrenamiento para los trabajadores).

Ejemplos incluyen fundiciones, hornos, secadoras, calderas y bodegas sin aire acondicionado (AC).

Titulo 8 sección (§) 3203 (IIPP) exige que los empleadores den atención a todo peligro de seguridad o salud que existe en el sitio de trabajo, tales como las enfermedades causadas por el calor. Otras normas que también aplican incluyen: T8§ 3363 Suministro de Agua, T8 § 3400 Servicios Médicos y de Primeros Auxilios.

Esta hoja informativa de Cal/OSHA busca crear conciencia acerca de las enfermedades causadas por el calor entre trabajadores y empleadores que laboran dentro de edificios, con el propósito de reducir el número de estas enfermedades. Los estudios de Cal/OSHA revelan que estas enfermedades e incluso la muerte pueden ocurrir dentro de edificios. También demuestran que la mejor manera de reducir estas enfermedades depende de la existencia de procedimientos escritos, acceso al agua, acceso al descanso en áreas frescas, aclimatización y observación del clima, respuestas de emergencias y entrenamiento de los trabajadores y supervisores.

LOS PASOS DE PREVENCIÓN DE ENFERMEDADES CAUSADAS POR EL CALOR INCLUYEN:

Procedimientos Por Escrito:

El T8§ 3203 exige que todo paso preventivo, método y procedimiento usado por el empleador para prevenir estas enfermedades, debe encontrarse en el Programa de Prevención de Enfermedades y Lesiones (IIPP). Estos procedimientos deben de indicar como conducir la evaluación del sitio de trabajo, corregir las condiciones o prácticas si es necesario, y como ésta información será comunicada a los trabajadores.



Beber Agua Frecuentemente:

El agua es una medida preventiva primordial en contra de

estas enfermedades. Los empleadores deben facilitar y animar el beber agua frecuentemente y mantenerse a la expectativa de situaciones que interfieran con el acceso al agua, especialmente durante las olas de calor.

Descanso en Áreas Menos Calurosas:

Los descansos proveen tiempo para enfriarse y oportunidad para beber agua. Los trabajadores deben tener acceso a periodos de descanso en áreas menos calurosas o con aire acondicionado y lejos de la fuente de calor, particularmente durante las olas de calor.

Aclimatización y Observación del Clima:

La aclimatización es un ajuste gradual y temporal del cuerpo al calor. Las personas necesitan varios días para acostumbrarse a trabajar en condiciones más calurosas que a las cuales están normalmente acostumbrados. El clima es otro factor importante que debe ser tomado en cuenta por los empleadores. Durante la ola de calor, establezca periodos adicionales de descanso y de beber agua. Los trabajadores que laboran dentro de edificios enfrentan un mayor riesgo de sufrir estas enfermedades durante una ola de calor si están laborando en edificios que carecen la habilidad de controlar la temperatura.

Estar Preparados para las Emergencias:

Los procedimientos escritos deben de incluir los pasos a seguir en una emergencia que aseguran una respuesta rápida y que incluye instrucciones de cómo llamar al 911 a pesar de una posible barrera del idioma, como dar instrucciones para encontrar el sitio de trabajo y como proveer primeros auxilios mientras llega la ambulancia.

Entrenamiento del empleado y del supervisor:

Todos los trabajadores y supervisores necesitan saber acerca de la importancia de beber agua frecuentemente y descansar en áreas menos calurosas, los signos y síntomas de estas enfermedades, como responder y a quien informar cuando alguien se sienta enfermo y necesite ir al hospital. El estudio de Cal/OSHA de estas enfermedades reveló que el entrenamiento de los supervisores desempeña un papel importante en los resultados de estas enfermedades: las víctimas cuyos supervisores no fueron entrenados, corrieron un riesgo más alto de morir comparados con aquellos cuyos supervisores si habían sido entrenados. Por lo tanto, la efectividad de sus procedimientos de prevención dependen en gran parte, de como usted entrene a los supervisores.

10. Combustible Dusts

OSHA[®] FactSheet

Hazard Alert: Combustible Dust Explosions

Combustible dusts are fine particles that present an explosion hazard when suspended in air in certain conditions. A dust explosion can be catastrophic and cause employee deaths, injuries, and destruction of entire buildings. In many combustible dust accidents, employers and employees were unaware that a hazard even existed. It is important to determine if your company has this hazard, and if you do, you must take action now to prevent tragic consequences.

How Dust Explosions Occur

In addition to the familiar fire triangle of oxygen, heat, and fuel (the dust), dispersion of dust particles in sufficient quantity and concentration can cause rapid combustion known as a deflagration. If the event is confined by an enclosure such as a building, room, vessel, or process equipment, the resulting pressure rise may cause an explosion. These five factors (oxygen, heat, fuel, dispersion, and confinement) are known as the “Dust Explosion Pentagon”. If one element of the pentagon is missing, an explosion cannot occur.

Catastrophic Secondary Explosions

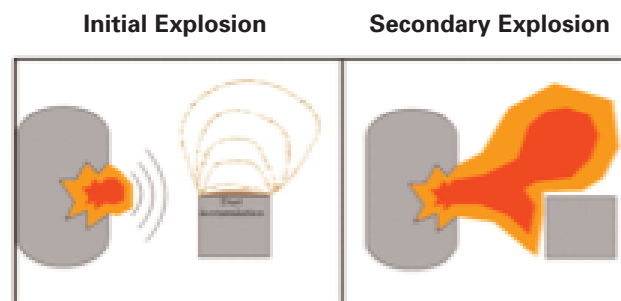
An initial (primary) explosion in processing equipment or in an area where fugitive dust has accumulated may dislodge more accumulated dust into the air, or damage a containment system (such as a duct, vessel, or collector). As a result, if ignited, the additional dust dispersed into the air may cause one or more secondary explosions. These can be far more destructive than a primary explosion due to the increased quantity and concentration of dispersed combustible dust. Many deaths in past accidents, as well as other damage, have been caused by secondary explosions.



A pharmaceutical plant after a dust explosion.

Industries at Risk

Combustible dust explosion hazards exist in a variety of industries, including: agriculture, chemicals, food (e.g., candy, sugar, spice, starch, flour, feed), grain, fertilizer, tobacco, plastics, wood, forest, paper, pulp, rubber, furniture, textiles, pesticides, pharmaceuticals, tire and rubber manufacturing, dyes, coal, metal processing (e.g., aluminum, chromium, iron, magnesium, and zinc), recycling operations, and fossil fuel power generation (coal).



Prevention of Dust Explosions

To identify factors that may contribute to an explosion, OSHA recommends a thorough hazard assessment of:

- All materials handled;
- All operations conducted, including by-products;
- All spaces (including hidden ones); and
- All potential ignition sources.

Dust Control Recommendations

- Implement a hazardous dust inspection, testing, housekeeping, and control program;
- Use proper dust collection systems and filters;
- Minimize the escape of dust from process equipment or ventilation systems;
- Use surfaces that minimize dust accumulation and facilitate cleaning;
- Provide access to all hidden areas to permit inspection;
- Inspect for dust residues in open and hidden areas at regular intervals;
- If ignition sources are present, use cleaning methods that do not generate dust clouds;
- Use only vacuum cleaners approved for dust collection; and
- Locate relief valves away from dust deposits.

Ignition Control Recommendations

- Use appropriate electrical equipment and wiring methods;
- Control static electricity, including bonding of equipment to ground;
- Control smoking, open flames, and sparks;
- Control mechanical sparks and friction;
- Use separator devices to remove foreign materials capable of igniting combustibles from process materials;
- Separate heated surfaces from dusts;
- Separate heating systems from dusts;
- Select and use industrial trucks properly;
- Use cartridge activated tools properly; and
- Use an equipment preventive maintenance program.

Injury and Damage Control Methods

- Separation of the hazard (isolate with distance);
- Segregation of the hazard (isolate with a barrier);
- Deflagration isolation/venting;
- Pressure relief venting for equipment;
- Direct vents away from work areas;
- Specialized fire suppression systems;
- Explosion protection systems;

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

- Spark/ember detection for suppression activation;
- Develop an emergency action plan; and
- Maintain emergency exit routes.

Applicable OSHA Requirements Include:

- §1910.22 Housekeeping
- §1910.307 Hazardous Locations
- §1910.1200 Hazard Communication
- §1910.269 Electric Power Generation, Transmission and Distribution (coal handling)
- §1910.272 Grain Handling Facilities
- General Duty Clause, Section 5(a)(1) of the *Occupational Safety and Health Act* (Employers must keep workplaces free from recognized hazards likely to cause death or serious physical harm).

Resources

Readily available from www.osha.gov are:

- Combustible Dust National Emphasis Program
- Safety and Health Information Bulletin (SHIB) (07-31-2005) *Combustible Dust in Industry: Preventing and Mitigating the Effects of Fires and Explosions*

See the SHIB or www.osha.gov for other applicable standards.

The primary National Fire Protection Association (NFPA) consensus standards related to this hazard are:

- NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
- NFPA 61, Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
- NFPA 484, Standard for Combustible Metals
- NFPA 664, Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities
- NFPA 655, Standard for the Prevention of Sulfur Fires and Explosions
- See www.nfpa.org to view NFPA standards.

For more complete information:



U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DSG 3/2008

11. Tailgate Safety Meeting Toolbox

Division of Occupational Safety and Health

Headquarters

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Santa Ana (714) 558-4300
Sacramento (916) 263-2803
Santa Rosa (707) 576-2419
Van Nuys (818) 901-5403

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Foster City (650) 573-3812
Fremont/San Jose (510) 794-2521
Fresno (559) 445-5302
Los Angeles (213) 576-7451
Modesto (209) 576-6260
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Monrovia/Pico Rivera (626) 256-7913
Sacramento (916) 263-2800

San Bernardino (909)383-4321
San Diego (619) 767-2280
San Francisco (415) 972-8670
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Van Nuys (818) 901-5403
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Eureka (707) 445-6611
Redding (530) 224-4743
Ventura (805) 654-4581

Elevator Unit Headquarters, Elevator, Ride, & Tramway

Santa Ana (714) 567-7211

High Hazard Unit Headquarters

Oakland (510) 622-3009

Mining and Tunneling Headquarters

Chico (530) 895-6938

Pressure Vessels Headquarters

Oakland (510) 622-3052

Consultation Offices

Your call to Consultation will in no way trigger
an inspection by Cal/OSHA Enforcement

<u>AREA</u>	<u>CITY</u>	<u>PHONE</u>
Northern California	Sacramento	(916) 263-0704
San Francisco Bay Area	Oakland	(510) 622-2891
Central Valley	Fresno	(559) 454-1295
San Fernando Valley	Van Nuys	(818) 901-5754
Los Angeles / Orange	Santa Fe Springs	(562) 944-9366
San Bernardino	San Bernardino	(909) 383-4567
San Diego / Imperial	San Diego	(619) 767-2060

Tailgate/Toolbox Safety Meeting

*Title 8, California Code of Regulation, Construction
Safety Orders, Section: 1509(e)*

Supervisory employees shall conduct "toolbox" or "tailgate" safety meetings, or equivalent, with their crews at least every 10 working days to emphasize safety.

Tailgate or Toolbox safety meetings are held to keep employees informed of work-related accidents, illnesses and workplace hazards. They allow supervisors to draw on the experience of workers, and use that experience to remind all employees - especially newer ones - on the dangers of particular construction processes, tools, equipment and materials.

How to Run an Effective Meeting

- Hold meetings at the start of shift or after break.
- Find a location where workers can relax or sit.
- Keep meetings brief - usually 10 to 15 minutes.
- Encourage employee participation.
- Use this guide.

Using this Guide for Tailgate Meetings

This guide is both a field reference and a resource for tailgate subjects.

Supervisors should chose topics that directly relate to their projects and site tasks.

- Pick from the subjects listed on this card.
- Read the material before discussing it.
- Determine the amount of material to be presented.

Additional Resources

- Review findings from safety inspections including corrective actions.
- Discuss accidents/near accidents including what/ where it happened, and prevention.
- Use equipment manuals and MSD Sheets.
- Cal/OSHA Safety Orders (Title 8) can be reviewed at: <http://www.dir.ca.gov/samples/search/query.htm>

Use this card as a guide to help you select subjects and track meeting dates. In addition, complete a separate training record for each meeting that includes worker name, date, subject, and the trainer's name.

SUBJECT	DATE
Employee Access (pg. 7)	
Administrative Requirements (pg. 9)	
Aerial Devices (pg. 14)	
Airborne Contaminants/Dust (pg. 16)	
Air Compressors (pg. 16)	
Asbestos (pg. 17)	
Blasting (Abrasive/Sand) (pg. 23)	
Blasting (explosive) (pg. 23)	
Carcinogens (pg. 25)	
Code of Safe Practices (pg. 26)	
Competent Person (pg. 26)	
Compressed-Air Worksites (pg. 27)	
Concrete Construction (pg. 28)	
Confined Spaces (pg. 33)	
Corrosive Liquids (pg. 37)	
Cranes (pg. 37)	
Demolition (pg. 44)	
Dust, Fume, Mist, Vapor, Gases (pg. 48)	
Electrical (pg. 49)	
Elevating Work Platforms (pg. 54)	
Elevators, Lifts, Hoists (pg. 55)	
Emergency Medical Services (pg. 56)	
Engine Exhaust Emissions (pg. 58)	
Erection and Construction (pg. 58)	
Ergonomics in Construction (pg. 62)	
Excavation, Trenches, Earthwork (pg. 64)	
Explosion Hazards (pg. 74)	
Fall Protection (pg. 75)	
Fire Protection/Prevention (pg. 82)	
First Aid (pg. 84)	
Flaggers (pg. 85)	
Flammable/Combustible Liquids (pg. 86)	

SUBJECT	DATE
Forklifts (pg. 87)	
Form, Falsework, Vertical Shoring (pg. 90)	
Guardrails (pg. 92)	
Hazard Communication Program (pg. 95)	
Hazardous Substances (pg. 96)	
Heat Stress (pg. 97)	
Heavy Construction Equipment (pg. 99)	
Housekeeping/Site Cleaning (pg. 102)	
Injury Illness Prevention Prog. (pg. 103)	
Ladders (pg. 106)	
Laser Equipment (pg. 109)	
Lead (pg. 110)	
Lighting (pg. 115)	
Lock-Out/Blockout (pg. 115)	
Machine Guarding (pg. 116)	
Multi-employer Work Sites (pg. 117)	
Personal Protective Equipment (pg. 118)	
Pile Driving (pg. 121)	
Ramps/Runways (pg. 123)	
Roofing Operations (pg. 124)	
Scaffolds (pg. 129)	
Silica Dust (pg. 146)	
Stairways (pg. 147)	
Toeboards (pg. 149)	
Toilet/Wash Facilities/Sanitation (pg. 150)	
Tools (pg. 151)	
Traffic Control (pg. 157)	
Training (pg. 158)	
Tunnels/Tunneling (pg. 159)	
Weld/Cut/Heat (Hot Work) (pg. 162)	
Wood Preservative Chemicals (pg. 166)	
Note: All page numbers relate to sections within the Pocket Guide.	
OTHER TOPICS	

**12. Safety and Health Training Instruction
Requirement**

Welcome to the California DEPARTMENT OF INDUSTRIAL RELATIONS

Division of Occupational Safety and Health (DOSH)

Cal/OSHA

Safety and Health Training and Instruction Requirements

Referenced in Subchapter 4 and 7, Cal/OSHA T8 Regulations (August 2006)

The following is a list of the *instruction and training* requirements contained in the **Construction Safety Orders** (Subchapter 4) and the **General Industry Safety Orders** (Subchapter 7) of Title 8, Division 1, Chapter 4 (with several references contained in Chapter 3.2) of the California Code of Regulations. Also included are references to both [Competent Person](#) and [Qualified Person](#).

While every effort has been made to ensure the accuracy of the information presented, users are cautioned to refer to Title 8 and the specific sections of interest. This list is a guide only and not meant to be a substitute for – or a legal interpretation of – the occupational safety and health standards.

For a printable version of this document, [click here](#).

Users may review Title 8 Regulations at: <http://www.dir.ca.gov/samples/search/query.htm>

Training Topic	T8 Section	Frequency of Training	Typical Job Classification	Cal/OSHA Publication
Accident Investigation	3203(a)(7)(F)	Initial	Supervisors/Accident Investigators	Model Program(s) IIPP: For High Hazard Employers For Non-High Hazard Employers For Employers with Intermittent Employees (English & Spanish) For Employers With Intermittent Workers in Agriculture (English & Spanish) Guide to Developing IIPP
Accident Prevention Signs & Tags	3341(d)(5)	Initial	Impacted Employees	Lockout/Blockout
Acetylene Fuel & Gas Safety	1740(k)(1)	Initial	Users	
Acrylonitrile (AN)	5213(o) 5213 (appendix B)	Initial Annual	Exposed Employees Qualified Person	
Actinolite (Non-Asbestos)	5208.1	Initial Annual	Exposed Employees	

Anthophyllite (Non-Asbestos)	5208.1(n)	Initial Annual	Exposed Employees	
Agricultural & Equipment Tractors	3441(a) 3664(b)	Initial Annual	Involved Employees Operators	Agricultural - Industrial Tractors Farm Labor Contractors Guide
Asbestos Consultant Site Surveillance Technican	341.15	Initial	Certified Persons	
Asbestos/Asbestos Awareness	1529(k)(9)(B) 5208(j)(7)(B) 1529	Initial Annual	Employees likely exposed =>PEL & those who perform Class I-IV operations	
Building Inspector Project Designer	341.16	Initial	Assigned	
Cement Pipe	341.17	Initial	Exposed Employees	
Class I-IV Operations	1529(o)(4) 341.9	Initial Annual	Competent Person Qualified Person	
Battery Handling/ Changing/Charging	5185(a)	Initial	Assigned Employees	
Benzene	5218(i) & (j)(3)	Initial Annual	Exposed Employees	
Bloodborne Pathogens	5193(g)(2)	Initial Annual	Potentially Exposed Employees	A Best Practices Approach for Reducing Bloodborne Pathogens Exposure Exposure Control Plan for Bloodborne Pathogens
Boatswains Chair	1662(a)	Initial	Users	
1,3-Butadiene	5201(l)(2)	Initial Annual	Exposed Employees	
Cadmium	5207(m)(4) 1532	Initial Annual	Exposed Employees Competent Person	
Carcinogens As Listed	5209(e)(5)	Initial	Exposed Employees	
Chemical Hygiene for Laboratories	5191(f)(2)	Initial New Hazards Refresher	Laboratory Employees	
Coke Oven Emissions	5211(t)	Initial Annual	Exposed Employees	
Compaction Equipment	4355(a)(2)	Before Use	Users	
Confined Spaces	5157(g) 5158(c)(2)	Initial Program Update Changes	Affected Employees	Confined Space: Is It Safe To Enter?
Marine Terminal Ops.	3463(b)(5)(B)		Exposed Employees	
Training Topic	T8 Section	Frequency of Training	Typical Job Classification	Cal/OSHA Publication
Control of Hazardous Energy	3314(j)	Initial	Authorized Employees	Lockout/Blockout
Cotton Dust	5190(i)	Initial Annual	Exposed Employees	

Cotton Gins/ Processing Mach.	4640		Qualified Person	
Cranes & Other Hoisting Equipment Incl. Mobile/ Tower/ Derrick	5006.1(a) 5006 4966, 4994, 4999, 5000, 5004, 5031, 5043, 5044	Initial Mobile & Tower Cert. @ 5 yrs	Mobile & Tower Crane Operators Qualified Person Authorized Employees	
Cranes/Hoisting Equipment - Marine Terminals	3472(d)(3)	Initial	Operators	
Demolition	1734 1735(u) 1736		Qualified Person	
1,2 Dibromo-3-Chloropropane (DBCP)	5212(i)(3) & (n) 5212 (Appendix B)	Initial Annual	Exposed Employees Qualified Person	
Diving Operations	6052	Initial	Assigned Employees	
Elevating Work Platforms & Aerial Devices	3648(l)(7) 3648(c) 3646(c) 3638(d)	Before Use	Users Authorized Personnel	
Emergency Action Plan	3220(e)	Initial Plan Update	Impacted Employees	
Emergency Procedures (Construction)	1512(d)	Initial	Assigned Employees	
Equipment & Machinery (Construction)	1510(b)	Initial	Qualified Person	
Erection & Construction – Bolting/ Riveting/ Plumbing Structural Wood/ Steel Frame Steel Erection	1716 1716.1 1716.1(f)(1) 1716.2(j) 1710	Initial	Assigned Employees Competent Person Qualified Person	Pocket Guide for the Construction Industry (English / Spanish) + Update Sheet)
Ergonomics	5110(b)(3)	Initial – When Standard is Triggered	Employees in affected job classifications (identical jobs) when standard is triggered	Back Injury Prevention Guide in the Health Care Industry for Health Care Providers Easy Ergonomics Ergonomics in Action Fitting The Task To The Person: Ergonomics for Very Small Businesses Easy Ergonomics for Desktop Computer Users
Ethylene Dibromide (EDB)	5219(j)	Initial Annual	Exposed Employees	
Ethylene Oxide	5220(j)(3) 5220 Appendix A	Initial Annual	Exposed Employees	

Excavation/ Trenching/ Shoring	1541		Competent Person	Trenching Safety (Tailgate Topic) Pocket Guide for the Construction Industry
Explosives	5239 5322 5329 344.20, 344.21	Initial	Assigned Employees Competent Person Licensed Blaster	
Explosives – Deteriorated	5240		Competent Person	
Training Topic	T8 Section	Frequency of Training	Typical Job Classification	Cal/OSHA Publication
Explosives Storage Magazines	5256		Competent Person	
Fall Protection	1671.1	Initial	Affected Employees Competent Person Qualified Person	
Fall Protection – Date Palm Ops.	3458		Competent Person	
Fire Brigades (Private)	3411(c)	Initial/ Quarterly/ Annual Refresher	Assigned Employees	
Fire Extinguisher & Fire Fighting Equipment	6151(g)(1)-(2)	Initial Annual	Assigned Employees	
Fire Prevention Plan	3221(d)(1)-(2)	Initial New Hazards	Exposed Employees	
Fire Protection – Fixed Extinguishing Systems	6175(b)(10) 6181(b)(2)	Initial Annual	Employees Assigned Maintenance/Operation Exposed Employees	
Fire Protection – Standpipe & Hose System Inspection	6165(f)(2)(F)	Initial	Assigned Employees	
First Aid First Aid & CPR	3439(b) 6251(d)(2) 3400(b) 5157, 5158, 5193 3421, 6052	Initial Changes Every 2 years (or as specified by cert. organization)	Assigned Employees Supervisors	
First Aid (Construction)	1512(b) & (d)	Initial Updated	Assigned Employees	
Flaggers (Traffic)	1599(f) & (g)	Initial	Assigned Employees	
Flammable Liquids/ Gasses/Vapors – Industrial Plants	5561		Qualified Person	
Fumigation – General	5221(b)	Initial	Exposed Employees	
Formaldehyde	5217(n)	Initial Annual	Exposed Employees	
Hazard Communication	5194(b)(1)	Initial New chemicals or processes	Exposed Employees	Guide to California Hazard Communication Regulation
Hazardous Substance Containers Clean/ Repair/Alter	5166(a)	Initial	Assigned Employees	
Hazardous Waste Operations & Emergency Resp.	5192 (e) & (q)(6)	Initial Annual Refresher	Assigned Employees Qualified Person	

Hearing (Noise) Protectors Conservation	5098(a)(4) 5097(d) (5)(A)&(B) 5099(a)	Initial Retraining Initial Annual	Employees Provided Protectors All Employees Exposed to =>85 dBA TWA	
Heat Stress	3395	Initial	Exposed Employees	Protect Yourself from Heat Illness (English/Spanish)
Helicopter Operations	1901(c)	Daily Briefing	Involved Personnel	
Training Topic	T8 Section	Frequency of Training	Typical Job Classification	Cal/OSHA Publication
Industrial/Lift Trucks (Forklifts) & Tractors	3657(i) 3664(b) 3668	Initial, Annual Observed Unsafe Operation Post Accident Equipment Change Workplace Change (Operator eval. @ 3 years)	Operators	Operating Rules for Industrial Trucks Poster (English / Spanish)
Injury & Illness Prevention Program	3203(a)(7) 1509(e)	Initial Updated	All Employees Supervisor Tailgates	Model Program(s) IIPP: For High Hazard Employers For Non-High Hazard Employers For Employers with Intermittent Employees (English & Spanish) For Employers With Intermittent Workers in Agriculture (English & Spanish) Guide to Developing IIPP
Inorganic Arsenic	5214(m)	Initial Annual	Exposed Employees	
Job Hazard(s)	3203(a)(7) 1510(a)	Before Job Assignment New Hazards	All Employees	Guide to Developing IIPP
Laboratory Safety (See Chemical Hygiene)	5191(f)	Initial New Hazards Refresher	Laboratory Employees	
Laser Equipment	1801(a)	Initial	Operators Qualified Person	
Laundry/Dry Cleaning	4494(a)	Initial Periodic	Assigned Employees	
Lead Lead in Construction	5198(l) 1531.1(1) (1)(C)-(D) 1532.1(l)	Initial Annual	Exposed Employees/ Supervisors Exposed Employees => Action Level	Lead in Construction (Fact Sheet)
Lift Slab Construction	1722.1		Competent Person	

Lockout/Blockout	3314 3314(j)	Initial When Updated	Affected Employees Qualified Person	Lockout/Blockout
Machinery & Equipment	1510(b)	Before Use	Qualified Person	Lockout/Blockout
Marine Terminals	3463(b)(5)(B) 3464(a)(1) 3462(b) & (d) 3463, 3472	Initial	Exposed Employees Supervisors Qualified Person	
Medical & Exposure Records - Access	3204(g)(1)	Initial Annual	Affected Employees	Access to Medical and Exposure Records (poster) (English / Spanish)
Metal Working (forging) Machines	4243(a)(6)	Initial	Operators/Maintenance Personnel	Power Press Safety – Tool Box Topics
4,4-Methylenebis (2-Chloroaniline) MBOCA	5215(j)	Initial Annual	Exposed Employees	
Methylene Chloride	5202(l) 5202 (Appendix A)	Initial & As Necessary	Exposed Employees Qualified Person	
Methylenedianiline	5200(k)(3) 1535	Initial Annual	Exposed Employees	
Miter Saws	4307.1(c)	Initial	Operators	
Noise Exposure	5099(a)	Initial Annual	Employees Exposed => 85dBA TWA	
Openings/Holes – Floors & Roofs	3212(b)		Qualified Person	
Paper Converting/ Printing Machines – H&-Fed Engraving Presses	4445(3)	Initial Changes	Operators/ Maintenance Personnel	
Personal Fall Arrest/Restraint Systems/	1670(b)(19)		Competent Person	
Personal Protective Equipment	3380(c)	Initial	PPE Users	
Pesticide Safety	5194(h)		Handlers & Applicators	
Pile Driving	1600		Competent Person	
Training Topic	T8 Section	Frequency of Training	Typical Job Classification	Cal/OSHA Publication
Calif. Posting Requirements	340	Initial	All Employees	
Powder-Actuated Tools	1685(a)(1) 1689(a)	Initial	Users Qualified Person	
Power Presses	4203(a) 4203(b) 4208.1(m)(1) 4208	Initial Annual	Inspectors/Maintenance Operators PSDI Operators Qualified Person	Power Press Safety (Tailgate Topic)
Powered Platforms (Installed) for Building Maintenance	3298(a) 3296	Initial	Assigned Employees Qualified Person	
Process Safety Management	5189(g)	Initial Refresher & Supplemental Certification	Involved Employees	
Pulp, Paper & Paperboard Mills	4402	Initial	Exposed Employees	
Railroad – Signs & Signals	3333(d)	Initial	Assigned Employees	

Reinforcing Steel/ Similar Projections	1712(f)(A)		Qualified Person	
Respiratory Protection	5144(c) & (k) 5144 Appendix A 5144 Appendix C	Initial Annual	Users	Respiratory Protection in the Workplace New Respirator Regulation (Fact Sheet)
Roofing	1509(a) 1730(b)(8)-(9)	Initial	Qualified Person	Roofing Safety (Tailgate Topic)
Rope Access Equipment	3270.1(c) 3270.1	Initial Annual Refresher	Assigned Employees Qualified Person	
Rubber/ Composition Working Machines	4592		Competent Person Test/Maintenance	
Scaffolds	1637(k)(1) 1637 1658(g)	Initial	Erectors & Dismantlers: Qualified Person	
Supervisory Safety Training	3203(a)(7)(F)	Initial Change	Supervisors	
Tanks – Open Surface	5154(j)(1)	Initial	Assigned Employee	
Traffic Control – Flaggers	1599(f) & (g)	Initial	Flaggers	
Tree Work General Date Palm Ops.	3420(b) , 3421(c) 3423(a) , 3427 3428(a) 3458	Initial	Assigned Employees Qualified Person	
Tremolite (Non-Asbestos)	5208.1(n)	Initial Annual	Exposed Employees	
Vinyl Chloride	5210(j)	Initial Annual	Exposed Employees	
Welding & Cutting Safety – Hot Work	4799 4848(a) 1537(a)	Initial	Welders Fire Watchers Qualified Person	
Wheels or Rims – Servicing	3326(c)	Initial	Service Personnel	Servicing Single, Split Rim & MultiPiece Rim Wheel (Tailgate Topic)
Window Cleaning	3282(d) & (f) 3286(a)(2)	Initial	Assigned Employees	

Qualified Person ([Back to Top](#))

A qualified person is a person **designated** by the employer; and by reason of **training**, experience, or instruction has demonstrated the ability to perform safely all assigned duties; &, when required is properly licensed in accordance with federal, state, or local laws and regulations.

Examples:

- Mobile Crane & Tower **Crane** Operators 5006.1(a)
- **Scaffold** Erection & Dismantling Supervisors 1637(k)(1)
- **Demolition** 1736
- **Personal Fall Arrest** System supervisors 1670(b)

Competent Person ([Back to Top](#))

A competent person is a person who is **capable** of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees. The competent person has the **authority** to impose prompt corrective measures to eliminate these hazards.

Examples:

- **Excavation** - Inspectors 1541
- **Fall Protection** Plan implementers & supervisors 1671.1
- **Lift Slab Construction** 1522.1

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