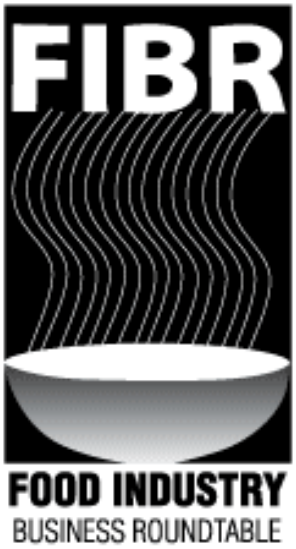
ENVIRONMENTAL COMPLIANCE GUIDEBOOK FOR WHOLESALE FOOD FACILITIES

Regional Wholesale Food Processor Committee



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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. I t 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 water 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.

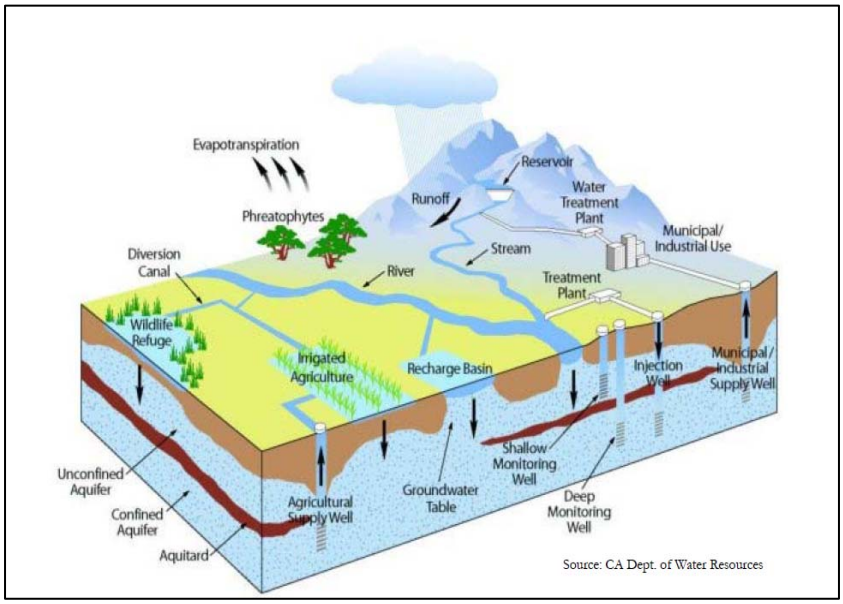

Figure 1 – Hydrologic Cycle

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.

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

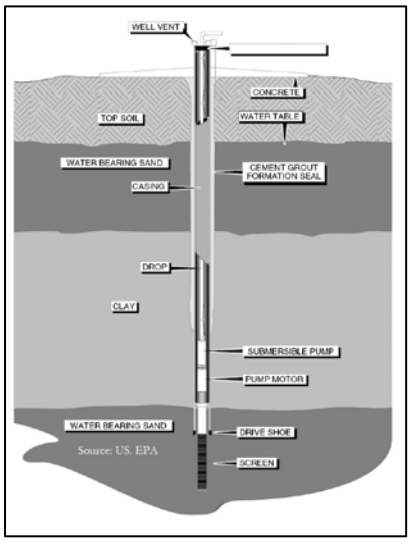

Figure 2 – Water well details

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.

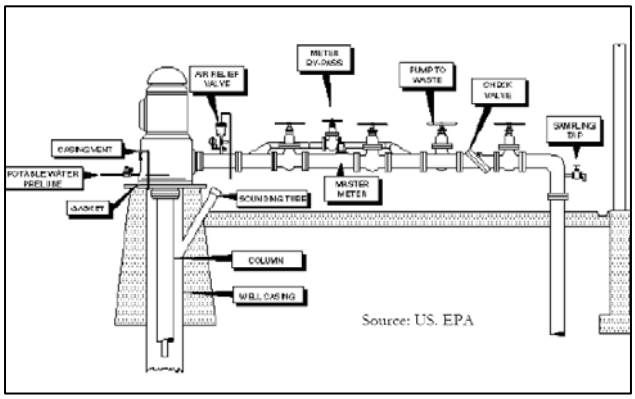

Figure 3 – Water well pump details

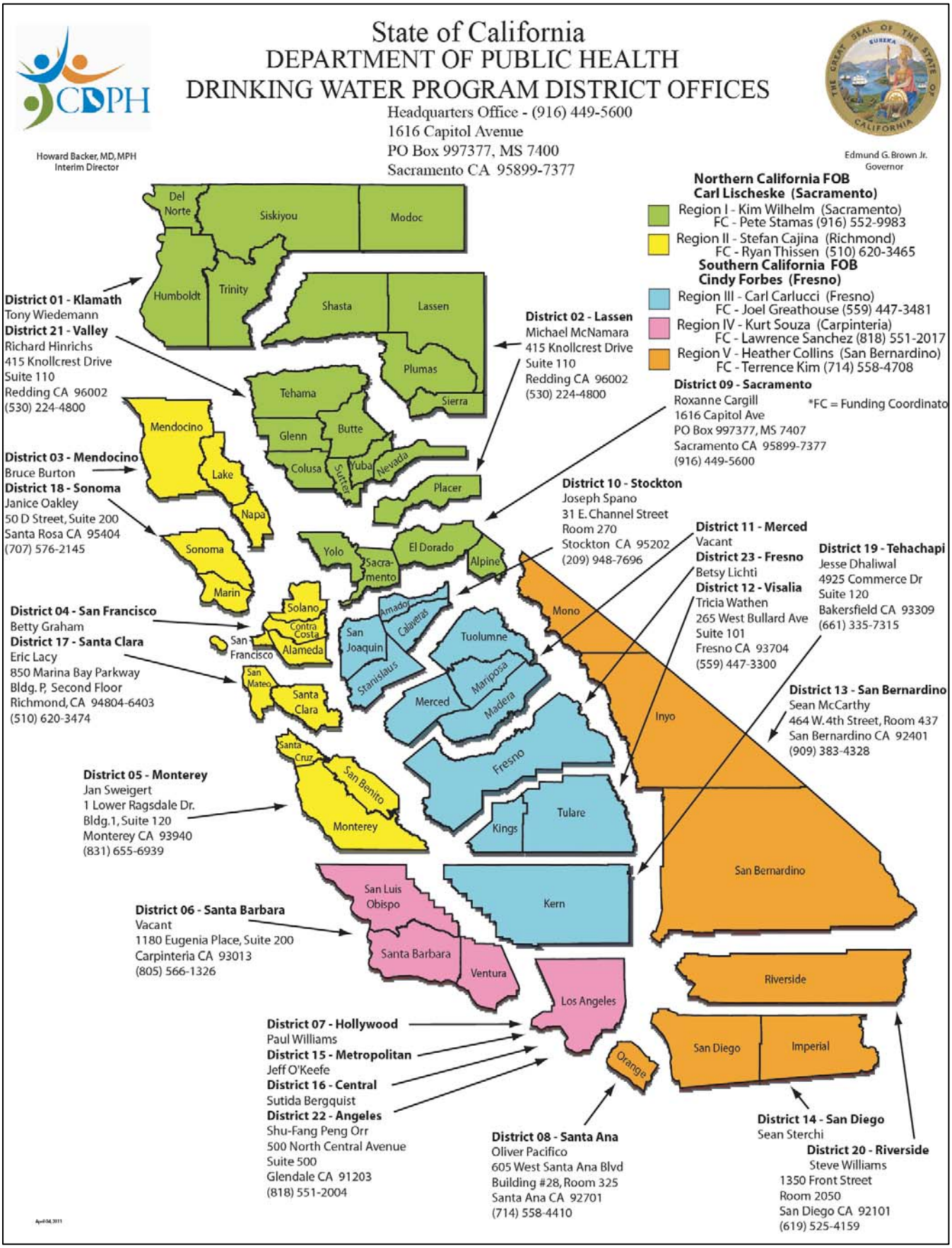

Figure 4 – California Department of Public Health – Drinking Water Branch Contact Information

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

Photo 2 – Small water system well and storage

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 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:

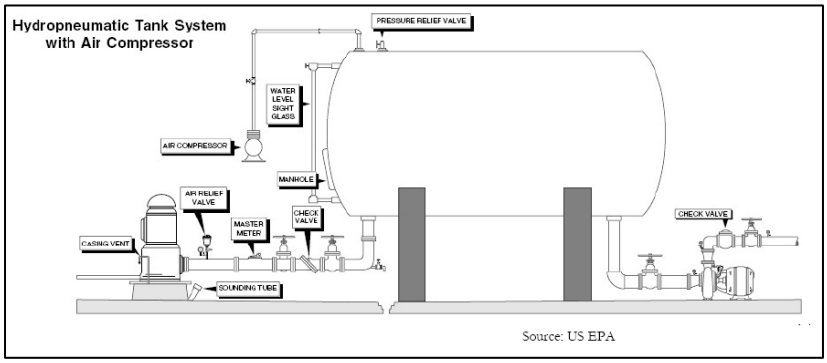

Figure 5 – Water well and pressure pump details

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
Radionucleides	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 lambia, 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, NO3)	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-trifloroethane 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		
TTHMs (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 halocetic 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.

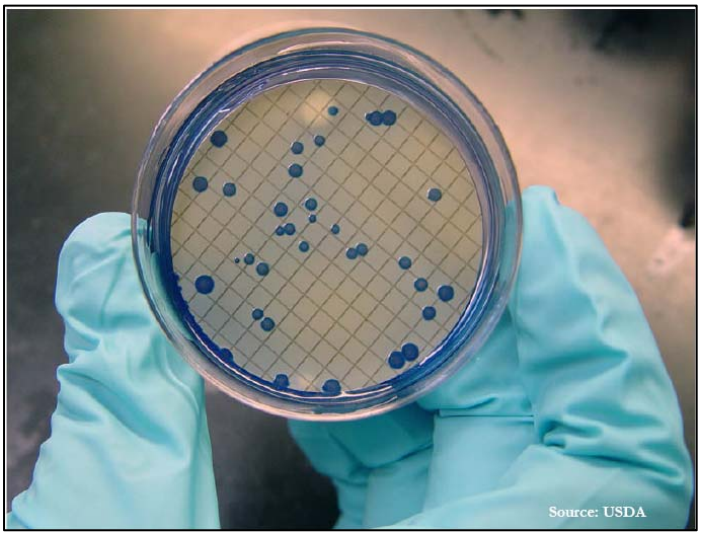

Photo 2 – Fecal coliform

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.

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	• 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	• 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 • Record keeping
Do Not Drink Your Water	• 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	
Do Not Use Your Water	• Water has an unknown contaminant or the use of water can adversely impact public health • Credible terrorist threat confirmed by local response agencies	• 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
		• Monitor notification from your water company • Conduct assessment of processed food and consider voluntary recalls as necessary
Boil Water Cancellation Notice or Problem Corrected	• Water systems violations corrected • Testing results reveal water system now in compliance	• Flush the facility water system • Record keeping
Tier II - Water Systems Violations		
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	• 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	• Record keeping
Tier III - Water Systems Violations		
These notices will appear in the annual water quality reports	• Monitoring violations are minimal threats to public health and have been resolved	• 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 3- Reclaimed water warning sign

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.

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.

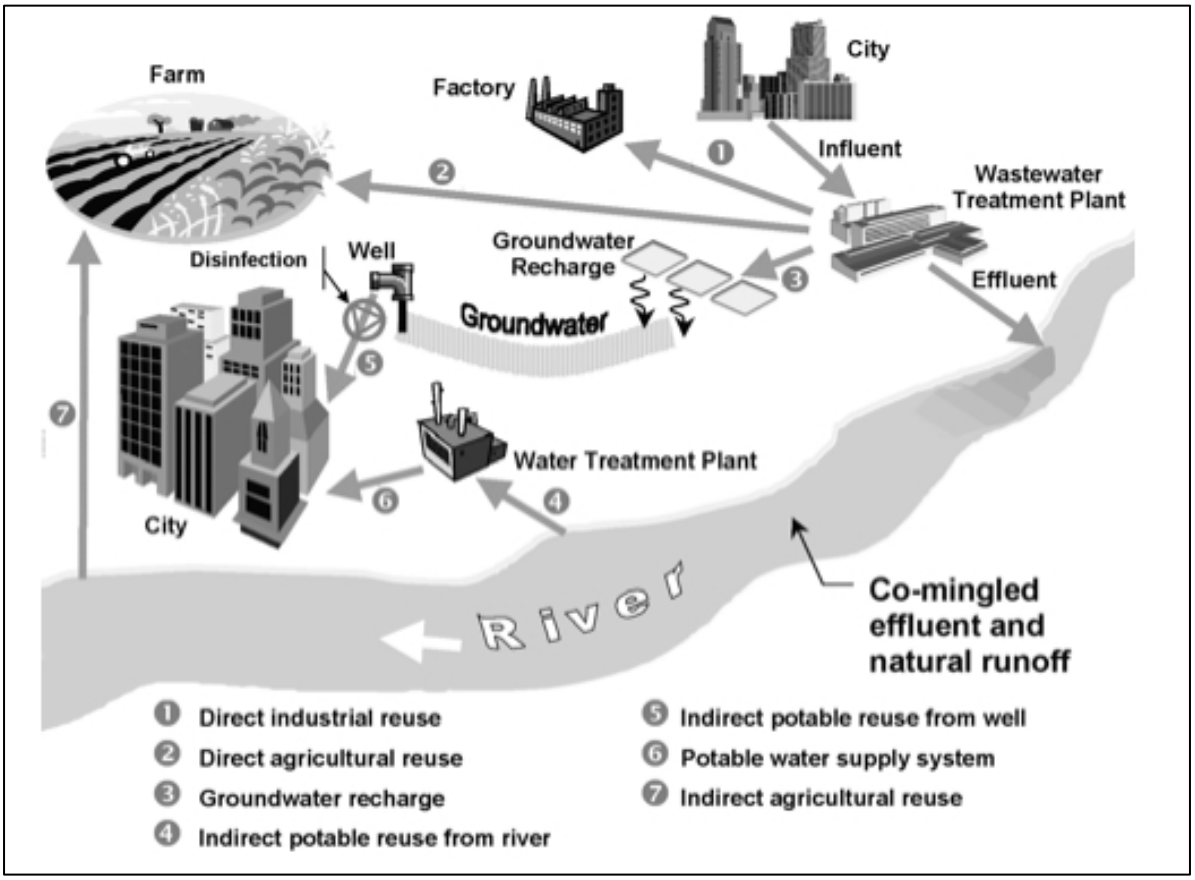

Figure 7 – Reclaimed water hydrologic cycle

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

Table 8 – Approved reclaimed water use

Irrigation	Food crops School yards Gold 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:

Photo 5- Reclaimed water toilet flushing sign

- 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

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.

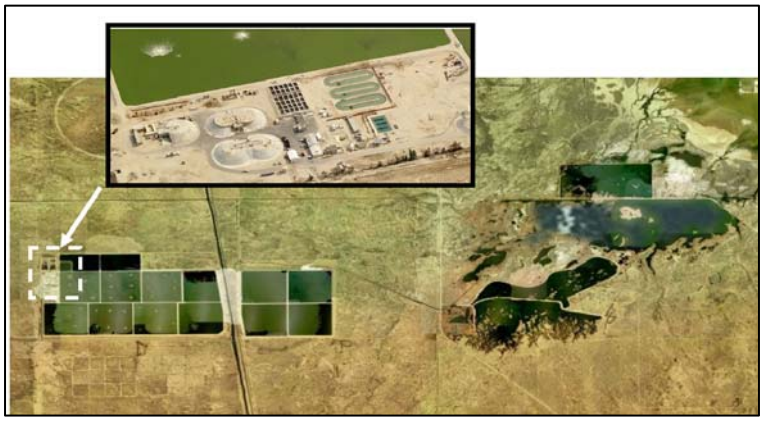

Photo 6 – Lancaster sewage treatment plant with treated effluent discharge to Piute Ponds

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).

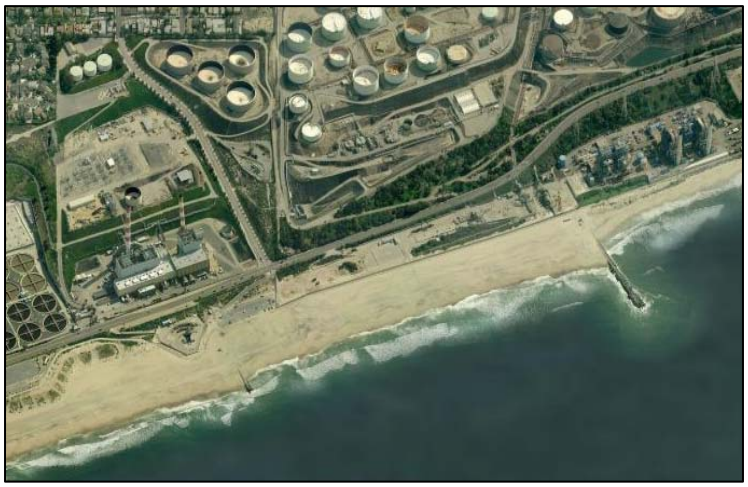

Figure 7 – Hyperion sewage treatment plant with treated effluent discharge to the ocean

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:

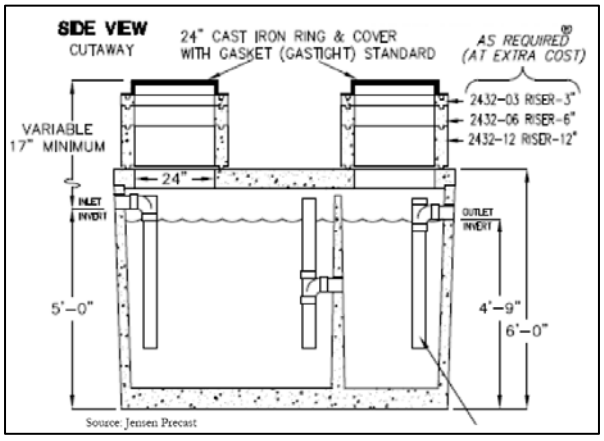

Figure 8 – Grease interceptor

- 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:

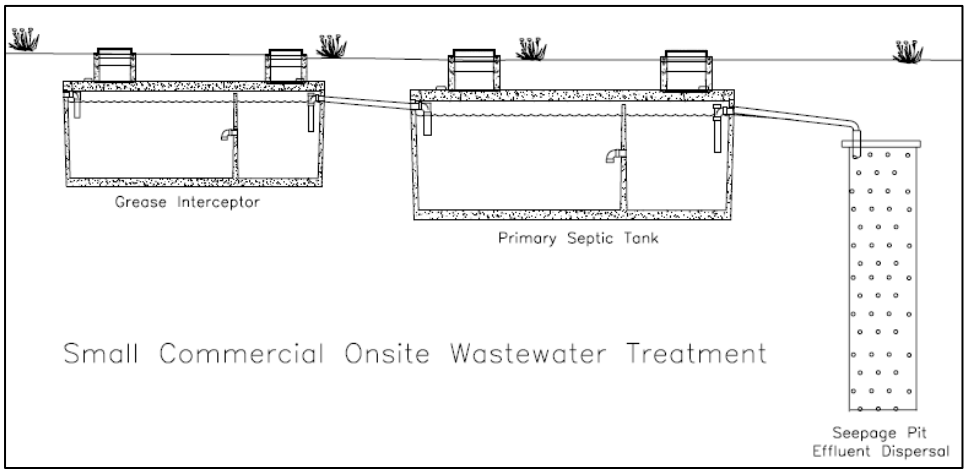

Figure 9 – Small commercial onsite wastewater treatment system

- Obtain a Waste Discharge Permit with the local Regional Water Quality Control Board and comply with the permit requirements
- Install and 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

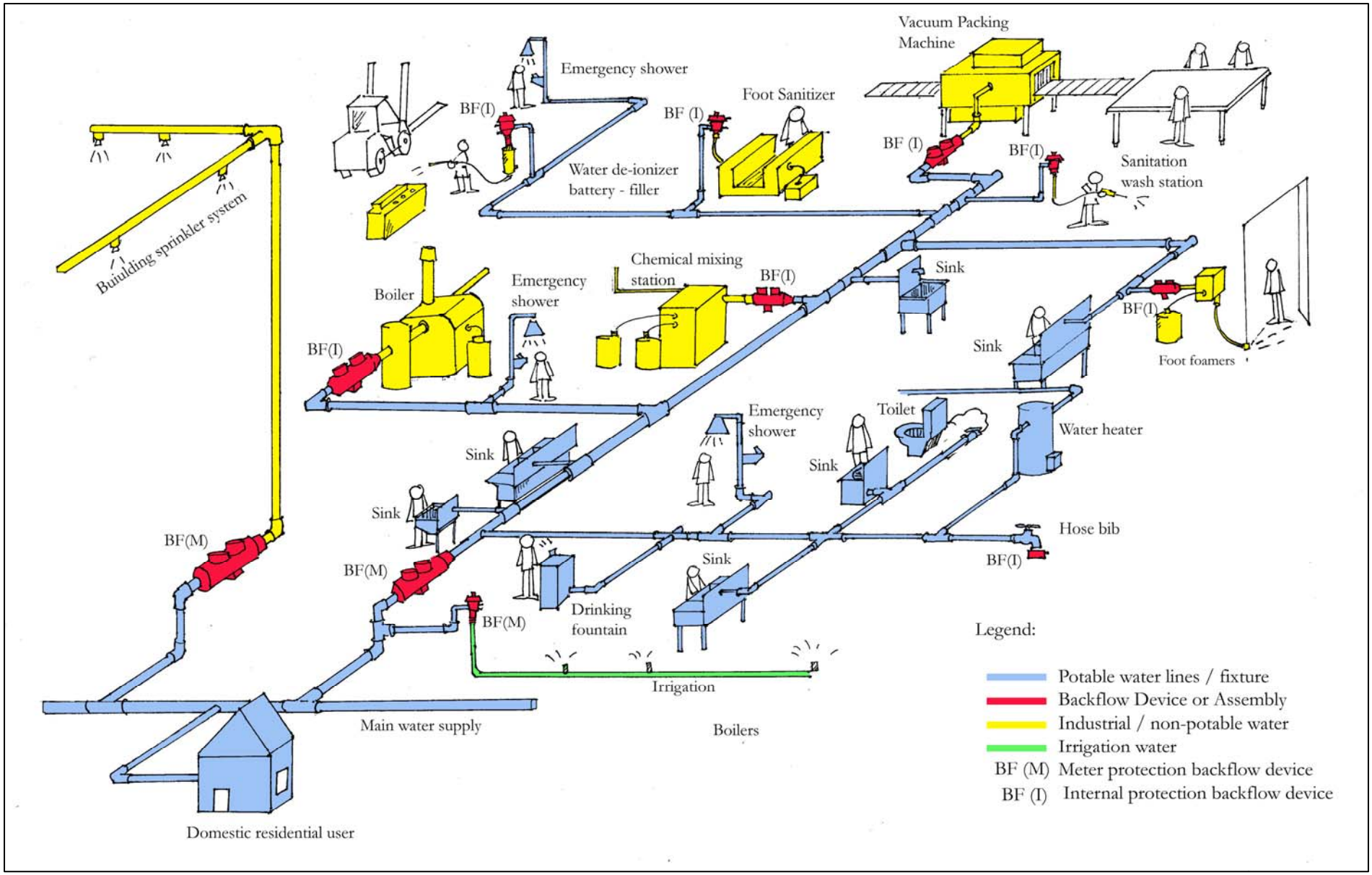

Figure 10 – Typical wholesale food facility plumbing layout and recommended areas for backflow device installation

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 of 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.

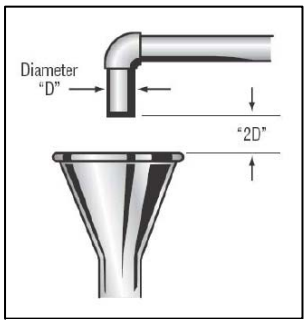

Figure 11 – Air gap

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:

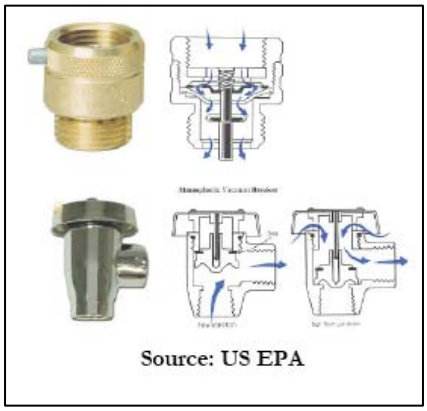

Figure 11 – Atmospheric Vacuum Breaker

- 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

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.

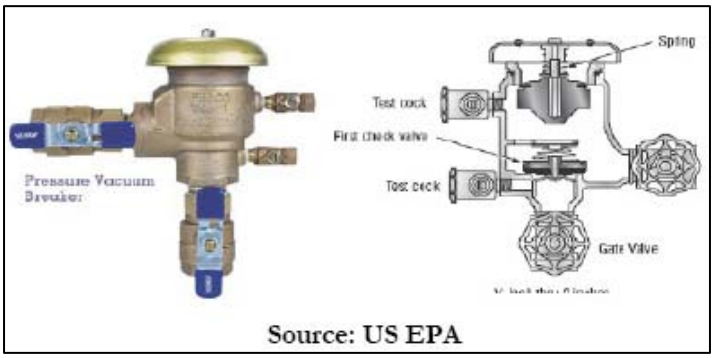

Figure 12 – Pressure Vacuum Breaker

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 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:

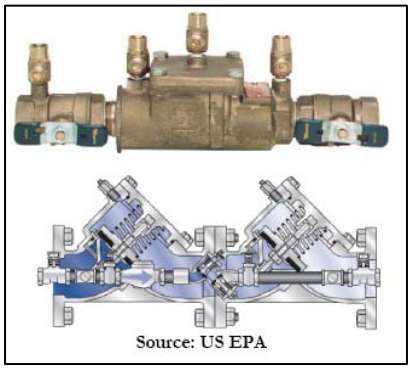

Figure 13– Double Check Valve

5. Reduced Pressure Principle Backflow Preventer (RP)

The 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"

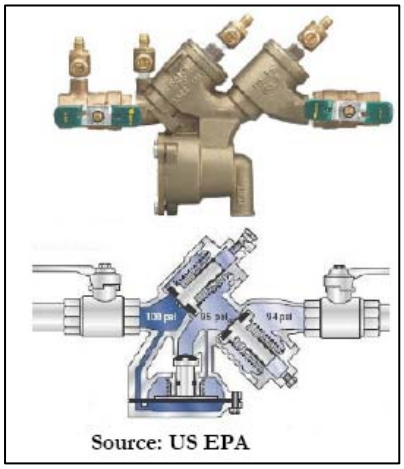

Figure 14 – RP – Reduced pressure principle device

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 of 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

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X. Appendix and Supplementary Information

A. Supplemental Guidebooks

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

2. Emergency Handbook for Food Managers – Advanced Practice Center

B. Water

1. Drinking Water Emergency Notification Fact Sheet – US EPA

2. Emergency Disinfection of Drinking Water – US EPA

3. Cryptosporidium in the Water – Center for Disease Control

4. Drinking Water and Health – US EPA

C. Reclaimed Water

1. California Statutes Related to Reclaimed Water – CA Department of Public Health Drinking Water Branch

2. California Regulations Related to Reclaimed Water – CA Department of Public Health Drinking Water Branch

3. Clearwater Program – L.A. County Sanitation District

4. California Laws for Reclaimed Water – "The Purple Book" – CA DPH Drinking Water Branch

5. Irrigation with Reclaimed Water- State Water Resources Control Board

6. Guidelines for Construction/Use of Reclaimed Water – Los Angeles County Environmental Health

7. Recycled Water User Manual – L.A. County Recycled Water Advisory Committee

D. Wastewater

1. Wastewater Ordinance – Los Angeles County Sanitation District

2. Industrial Waste Pre-Treatment Program - Los Angeles County Sanitation District

3. Surcharge Connection Fee – Los Angeles County Sanitation District

E. Cross Connections

1. Cross Connection Manual – US EPA

2. Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks - US EPA

F. Stormwater

1. Notice of Intent – Form 200 – State Water Resources Control Board

2. Notice of Non-Applicability – Los Angeles Regional Water Quality Control Board

3. Stormwater Management in California - State Water Resources Control Board

4. Stormwater Pollution Prevention Plan Checklist - State Water Resources Control Board

G. Hazardous Materials and Hazardous Waste

1. California Health and Safety Code – Business Plans and Reporting

2. Compliance Guide – Los Angeles County Fire Department – Health HazMat

3. Unified Form (Long Form)– (Business Plan) – Los Angeles County Fire Department – Health HazMat

4. Unified Form (Short Form)– (Business Plan) – Los Angeles County Fire Department – Health HazMat

5. Sample of Completed Unified Form (Business Plan) - Los Angeles County Fire Department – Health HazMat

6. Labeling of Hazardous Materials - Los Angeles County Fire Department – Health HazMat

7. Separation of Incompatible Materials - Los Angeles County Fire Department – Health HazMat

8. Universal Waste Management – California Department of Toxic Substances

9. Management of Cathode Ray Tubes - Los Angeles County Fire Department – Health HazMat

10. Management of Empty Containers - California Department of Toxic Substances

11. Obtaining and Cal EPA Identification Number (hazardous waste) - California Department of Toxic Substances

12. Hazardous Wastes of Concern - California Department of Toxic Substances

13. Hazardous Waste Compliance Manual - Los Angeles County Fire Department – Health HazMat

14. Empty Container Management - California Department of Toxic Substances

15. Hazardous Waste Generator Requirements - California Department of Toxic Substances

16. Accumulation Storage Time Limitations for Hazardous Wastes – Ca DTSC

17. Management of Waste Aerosols Cans - Los Angeles County Fire Department – Health HazMat

H. Spills Reporting

1. Hazardous Materials Spill and Notification Guide CalEMA

2. Reporting Sewage Releases Fact Sheet - CalEMA

I. Injury Illness and Prevention Planning - CalOSHA

1. CalOSHA Consultation Services

2. Hazard Assessment Checklist

3. Injury Illness and Prevention Plans

4. Model Injury and Illness Prevention Plan for Non High Hazard Workplace

5. Model Injury and Illness Prevention Plan for High Hazard Workplace

6. Lockout / Blockout Guidance

7. Model Injury and Illness Prevention Plan Seasonal Workers

8. Ergonomic Guidance for Materials Handling

9. Indoor Heat Illness Prevention

10. Combustible Dusts

11. Tailgate Safety Meeting Toolbox

12. Safety and Health Training Instruction Requirement