Introduction to
Hazardous Waste Management

Student Manual

7th Edition

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Introduction to Hazardous Waste Management
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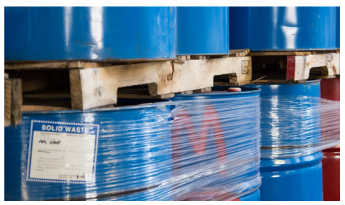

NES About Us

"Our Business Is Protecting Your Business."

Who We Are

Established in 1987, NES, Inc. (*NES*) is a nationally recognized leader in environmental health & safety (EH&S) training and consulting. Our mission is to help our customers protect their employees, their assets, and the environment in a way that makes business sense.

We offer training across a broad range of EH&S topics to satisfy OSHA, EPA, and DOT training requirements for government agencies, regulators, and private businesses throughout the United States, and we have trained thousands of law enforcement personnel to respond to clandestine drug laboratory sites safely and effectively. We regularly participate in the annual California CUPA conference, providing hazardous waste management training and other compliance-based seminars on behalf of a diverse audience of conference attendees. Our environmental consulting expertise includes facility/site audits, waste management, tank assessments, transportation guidance, documentation review, plan preparation, and best management practices (BMPs).

NES provides industrial hygiene services covering indoor air quality, mold, water damage, hazardous materials exposure, and more. We administer major California storm water compliance groups and offer expert consultation on compliance concerns. Our professionals hold scientific degrees in a variety of professional registrations and maintain numerous certifications, including Certified Industrial Hygienist (CIH), Certified Asbestos Consultant (CAC), CDPH Certified Lead Inspector / Risk Assessor (CDPH I/A), and many others.

Why Our Clients Come Back

The federal and state regulations that employers and their employees deal with on a daily basis can be complicated and commonly change from year to year. Our professionals have real-world experience managing these regulations, and we work closely with our clients to develop cost-effective solutions to often complex EH&S issues. We excel in interpreting applicable regulations, explaining how they are typically enforced by regulators, and identifying what the monetary impacts can be to businesses that fall out of compliance. Whether we are providing consulting services, conducting training, sampling for hazards, or performing safety oversight, our approach is to regard your place of operations as an extension of our own, and our goal is to help protect your employees, the environment, and your bottom line.

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NES How We Can Help

Environmental Consulting

NES provides environmental compliance and consulting services on behalf of a broad range of clients. Comprising professionals with decades of industry experience, our EH&S consulting team applies proven risk management concepts to the goal of delivering customized solutions to compliance issues in a timely and cost-effective manner. Our clients include numerous manufacturers, commercial & retail entities, construction companies, trade associations, health care providers, law firms, academic institutions, regulatory agencies, and federal, state & local municipalities. Services include hazardous waste management characterization & classification, tank assessments, site audits, HMBP amendments & recertifications, SPCC Plan development & updates, transportation guidance, hazardous waste treatment permitting, environmental staffing, and litigation support.

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NES helps clients develop and maintain occupational health & safety programs that comply with federal and state regulations and protect worker safety. Services include worksite evaluations, gap analysis, exposure assessments, accident investigations & root cause analysis, and safety training. We provide safety observations for building abatement, gas & electrical transmission construction/maintenance, fleet maintenance & storage yards, air quality & ergonomics indoor operations, and facility construction, demolition, and/or maintenance projects.

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NES provides open enrollment, on-site, and online instruction on a broad range of EH&S issues, training staff at a multitude of government agencies and private industry businesses in California and beyond. We have earned a solid reputation as a prominent industry leader, maintaining numerous in-house subject matter experts who are regularly invited as guest presenters to the annual California CUPA Conference. We provide training for State regulatory inspectors and are contracted with select CUPAs throughout California to deliver training services to regulated businesses within their respective jurisdictions. Courses include HAZWOPER (40-/24-/16-hour initial & 8-hour refresher), emergency response (FRA, FRO, IC), hazardous waste management (Title 22), transportation (DOT, IMDG, IATA), and numerous OSHA compliance topics such as HazCom, bloodborne pathogens, confined spaces, fall protection, lockout/tagout, etc.

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Recognized internationally as the leader in clandestine laboratory safety training, *NES* developed the first clandestine laboratory safety program in the United States for DEA. We have trained thousands of law enforcement personnel throughout the U.S. and abroad to safely and effectively dismantle different types of clandestine drug labs and to work in other illicit hazardous environments.

Industrial Hygiene

NES performs a wide range of industrial hygiene services throughout California and across the U.S. Our professionals are skilled in competently conducting cost-effective assessments and evaluations to assist clients in achieving peace of mind. *NES* staffs subject matter experts holding a range of certifications, including CIH, CSP, CAC, CSST, CPEA, QISP, and CDPH I/A. Our IH team provides assessments for asbestos/NOA, various types of exposure, indoor air quality, mold, clandestine laboratories, and workplace hazards. Further services include wildfire remediation project support, noise surveys, lead sampling, and health & safety program development.

Storm Water Compliance

We specialize in guiding businesses in the industries of trucking, warehousing, manufacturing, recycling, logging, mining, farming, and more through Industrial General Permit (IGP) regulations. Since 1999, *NES* has served as the Technical Group Leader for the California Trucking Association Storm Water Compliance Group (CTACG), one of the largest storm water compliance groups in California, and we also administer the California Trucking Association Storm Water Program (CTASWP). These valuable services benefit members by reducing overall costs, simplifying compliance efforts, and contributing to a broader understanding of key best management practices.

We Also Offer:

- **Customized On-Site Training**
- **REHS Contact Hours for In-Class & Online Courses**
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SECTION I: INTRODUCTION

A. GOALS & OBJECTIVES

This manual supports *NES*' *Hazardous Waste Management* course, which was developed to assist businesses that generate hazardous waste in California with understanding the issues related to classifying, accumulating, managing, and shipping hazardous waste. The information contained in this manual is derived from statutes found in the California Health and Safety Code (HSC), federal hazardous waste regulations found in Code of Federal Regulations, Title 40 (40 CFR), and State hazardous waste regulations found in California Code of Regulations, Title 22 (22 CCR).

The first portion of this manual provides specific information and resources available to businesses in California. This information includes:

- Common definitions and acronyms
- Recordkeeping and management requirements
- Hazardous waste identification and classification (RCRA and non-RCRA)
- Container and tank management requirements
- Hazardous waste shipping requirements

The second portion of this manual covers broader waste management issues. This information includes:

- Land disposal restrictions
- Waste minimization
- Tiered permitting

B. DEFINITIONS

Aboveground Tank: A device meeting the definition of tank and situated in such a way that the entire surface area (including tank bottom) is completely above the plane of the adjacent surrounding surface and is able to be visually inspected.

Absorb: To take in or soak up by chemical or physical action (when referring to energy, a liquid, or another substance).

Accumulated Speculatively: Accumulating a material before recycling it. A material is not accumulated speculatively, however, if it can be shown that the material is potentially recyclable and a feasible means of recycling it exists and if, during the calendar year (commencing on January 1), the amount of materials recycled or transferred to a different site for recycling equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the 75 percent requirement is to be applied to each material of the same type (e.g., slag from a single smelting process) that is recycled in the same way (i.e., from which the same material is recovered or is used in the same way). Materials accumulated in units that would be exempt from regulation are not to be included in making the calculation. Materials already defined as wastes also are not to be included. Once removed from accumulation for recycling, materials are no longer in this category.

Accumulation: The temporary holding of hazardous waste during waste generation activities for a specific limit of time past the accumulation start date (not considered storage).

Activated Carbon: A highly adsorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions. In waste treatment it is used to remove dissolved organic matter from wastewater. It is also used in motor vehicle evaporative control systems.

Activated Sludge Treatment: Exposing waters to microorganisms and air. A portion of the organic matter is oxidized to carbon dioxide and water, and the other portion is synthesized into new microbial cells.

Acute Aquatic 96-Hour LC_{50}: The concentration of a substance or mixture of substances in water, in milligrams per liter, that produces death within 96 hours in half of a group of at least 10 test fish.

Acute Dermal LD_{50}: The dose of a substance or mixture of substances, in milligrams per kilogram of test animal body weight, that, when applied continuously to bare skin for 24 hours, produces death within 14 days in half a group of 10 or more rabbits.

Acute Inhalation LCLo: The lowest concentration of a substance or mixture of substances in air, other than acute inhalation LD_{50} in parts per million by volume if the substance or mixture of substances is a gas or vapor, reported to have caused death in

humans or animals.

Acute Effects: Toxic effects that occur over a relatively short period of time, i.e., minutes or hours (compare to **chronic** effects).

Acutely Hazardous Waste: Any hazardous waste classified as an acutely hazardous waste in Article 4 of Chapter 11 of 22 CCR.

Adsorb: To take up by attraction and hold to a surface. Chemicals are often adsorbed by soil particles, dust, activated charcoal, or other substrates.

Aeration: A process that promotes biological degradation of matter in water. The process may be passive (as when waste is exposed to air) or active (as when a mixing or bubbling device introduces the air).

Aerobic: Occurring in the presence of free oxygen.

Aerosol: A suspension of fine liquid or solid particles in gas.

Alkaline: A substance with a pH greater than 7. An alkaline waste is considered to be hazardous when its pH is ≥ 12.5.

Alternate Facility: A treatment, storage, and disposal facility to which a transporter may deliver a shipment of hazardous waste if it cannot be delivered to the designated facility. An alternate facility may be identified in box #18 on the Uniform Hazardous Waste Manifest.

Aromatic Compounds: In organic chemistry, compounds that contain one or more benzene rings.

Average Volatile Organic Concentration: The mass-weighted average volatile organic concentration of a hazardous waste as determined in accordance with the requirements of 22 CCR §66265.1084(a).

Bill of Lading: A shipping document containing information required by DOT for commodities and hazardous materials.

Bioaccumulation: The retention and concentration of a substance by an organism.

Biological Treatment: Treatment process utilizing living microorganisms to decompose organic wastes into less complex organic or inorganic substances. Techniques include activated sludge, aerated lagoons, trickling filters, waste stabilization ponds, and anaerobic digestion.

Bioremediation: The use of living organisms to clean up oil spills or to remove other pollutants from soil, water, or wastewater, e.g., the use of organisms such as non-harmful insects to remove agricultural pests or counteract diseases of trees, plants, and garden soil.

Biotransformation: The enzymatic transformation of a foreign compound into a different one. The new compound may be more or less toxic than the old one.

Boiling Point: The temperature at which a liquid changes to a gas at normal atmospheric pressure.

Bulking: The process of consolidating various quantities of the same types of wastes by placing them into a single larger container.

Byproduct: A material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slag or distillation column bottoms. The term does not include a co-product that is made for the general public's use and that is ordinarily used in the form in which it is produced by the process.

CAS Registration Number: A number assigned by the Chemical Abstracts Service to identify a chemical.

Certified Unified Program Agency (CUPA): A unified hazardous waste and hazardous materials management regulatory program established by CalEPA to consolidate, coordinate, and make consistent portions of the following six existing programs:

- Hazardous Waste Generators and Hazardous Waste On-site Treatment
- Underground Storage Tanks (USTs)
- Hazardous Material Release Response Plans and Inventories
- California Accidental Release Prevention Program (CalARP)
- Aboveground Storage Tanks (ASTs – Spill Prevention, Control, and Countermeasure Plans only)
- California Fire Code Hazardous Material Management Plans and Inventories

Characteristic Wastes: Wastes are considered hazardous if exhibiting one or more of the following

characteristics:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

Chronic: Of long duration. Chronic exposure usually refers to long-term, low-level exposure. Chronic toxicity refers to the effects produced by such exposure. Chronic exposure may cause latent damage that does not appear until later.

Closed-Vent System: A system that is not open to the atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

Conditionally Exempt Small Quantity Universal Waste Generator (CESQUWG): A person who generates, in any calendar month, ≤ 100 kg (220 lb) of RCRA hazardous wastes (including all RCRA universal waste) and ≤ 1 kg (2.2 lb or greater) of acutely hazardous waste.

Consignee: The ultimate treatment, storage, and disposal facility in the receiving country to which the hazardous waste will be sent.

Consolidated Manifesting: A hazardous waste manifest used by a milk run or consolidated transporter to combine hazardous waste shipments from multiple generators on one consolidated manifest pursuant to procedures in HSC §25160.2.

Container: Any device that is open or closed, and portable, in which a material can be stored, handled, treated, transported, recycled, or disposed of.

Contained-In Waste: Waste, media, or debris that contains or is contaminated with hazardous waste constituents.

Contingency Plan: A document setting out an organized and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.

Continuation Sheet: U.S. EPA Form 8700-22A. If used, continuation sheets become part of the manifest document. According to U.S. EPA regulations, continuation sheets are to be used to list additional transporters or additional wastes beyond those listed on the first page of the manifest.

Corrosivity: The ability to cause destruction of living tissue or steel surfaces by chemical action. DOT classifies materials as corrosive if they cause destruction of living tissue or steel surfaces by chemical action. Corrosive hazardous waste is a liquid (or a solid in California) with a pH ≤ 2.0 or ≥ 12.5 or a liquid (or a solid in California) that corrodes steel at a rate greater than ¼ inch (6.35 mm) per year.

Covered Container: Any container that is equipped with a cover or other device that will prevent the escape of a liquid or solid substance when closed.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): CERCLA (also known as *Superfund*) was enacted in 1980 to ensure that a source of funds would be available to clean up abandoned hazardous waste dumps, compensate victims, address releases of hazardous materials, and establish liability standards for responsible parties.

Day: A calendar day. Periods of time are calculated by excluding the first day and including the last day, except when the last day is a Saturday, Sunday, or other holiday specified in Government Code §6700, in which case it is also excluded.

Designated Facility or **Treatment, Storage, and Disposal Facility (TSDF):** A hazardous waste transfer, treatment, storage, and disposal facility that has received a permit (or a facility with interim status) in accordance with the requirements of Chapters 20 and 21 of 22 CCR; a permit from a state-authorized agency in accordance with part 271 of 40 CFR; or is regulated under Chapter 16 of 22 CCR; or has received a permit, a grant of interim status, or a variance to operate without a permit or grant of interim status from DTSC; or is otherwise authorized by law to receive specific hazardous wastes; and that has been designated on the manifest by the generator pursuant to 22 CCR §66262.20.

Designated Waste: A non-hazardous waste that, given the toxic nature of its chemical constituents, is considered to pose a potential threat or that threatens to discharge waste materials or constituents to waters of the State and would result in a condition of pollution or nuisance or one that affects the beneficial use(s) of the water. A special waste or any hazardous waste given a variance is generally considered to be a designated waste.

Discharge or **Hazardous Waste Discharge:** The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste on or into any land or water.

Disposal: The discharge, deposit, injection, dumping, spilling, leaking, or placing of any waste or hazardous waste on or into any land or water so that such waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters including groundwaters; or the abandonment of any waste.

Disposal Facility: A facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water and at which waste will remain after closure. The term *disposal facility* does not include a corrective action management unit into which remediation wastes are placed.

DOT Identification Number (UN/NA): DOT identification number for shipping purposes.

Electronic Manifest or **e-Manifest:** The electronic format of the hazardous waste manifest that is obtained from U.S. EPA's national e-Manifest system and transmitted electronically to the system and that is the legal equivalent of U.S. EPA Forms 8700-22 (Manifest) and 8700-22A (Continuation Sheet).

Electronic Manifest System or **e-Manifest System:** U.S. EPA's national information technology system through which the electronic manifest may be obtained, completed, transmitted, and distributed to users of the electronic manifest and to regulatory agencies.

Enclosure: A structure that surrounds a tank or container, captures organic vapors emitted from the tank or container, and vents the captured vapors through a closed-vent system to a control device.

Environmental Protection Agency (EPA): Federal agency chartered with protecting environmental health.

EPA Hazardous Waste Number: The number assigned to each hazardous waste listed in 40 CFR Part 261.31-33 and Article 4 of Chapter 11 of 22 CCR and to each characteristic hazardous waste identified in 40 CFR Part 261.21-24 and Article 3 of Chapter 11 of 22 CCR.

EPA Identification Numbers: 12-digit numbers assigned by U.S. EPA or DTSC to hazardous waste generators, transporters, and facilities [see **Identification Number**].

Exception Report: Report submitted by a generator that does not receive a signed copy of the manifest from the TSDF. Large quantity generators must file this report within 45 days of the date the waste was accepted by the initial transporter, and small quantity generators must submit the report within 60 days. Some states have modified the 45-day period.

Extremely Hazardous Waste: Any hazardous waste or mixture of hazardous wastes that, if human exposure should occur, may likely result in death, disabling personal injury, or serious illness caused by the hazardous waste or mixture of hazardous wastes due to quantity, concentration, or chemical characteristics.

Excluded Recyclable Materials: Pertains primarily to hazardous waste or a mixture of hazardous wastes in which a significant percentage of the waste is recycled and reused at the same location the waste is generated. Excluded recyclable materials must be labeled and properly managed while being accumulated on-site. Generators who produce and recycle more than 100 kg/month or more of excluded recyclable materials must report the on-site recycling activity to their CUPA.

Fine Powder: A metal in dry, solid form having a particle size smaller than 100 micrometers (0.004 inches) in diameter.

Flammable Range: For a given substance, the range of percentages from the LEL (lower explosive limit) to the UEL (upper explosive limit), any of which will ignite if provided an ignition source.

Flash Point: The lowest temperature at which a liquid gives off enough flammable vapors at or near its surface such that the vapors flash in the presence of an ignition source.

Forbidden: Materials prohibited from being offered or accepted for transportation. This prohibition does not apply if these materials are diluted, stabilized, or incorporated in devices and classed in accordance with the definition of hazardous materials.

Generator or **Producer:** Any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261 or Chapter 11 of 22 CCR or whose act first causes a hazardous waste to become subject to regulation.

Hauler: A transporter.

Hazard: The inherent ability to harm. A hazard produces risk if an exposure pathway exists and if exposure creates the possibility of adverse consequences.

Hazard Class: The category of hazard assigned to a hazardous material under the criteria of 49 CFR Part 173 and the provisions of the Hazardous Materials Table of 49 CFR §172.101. A material may meet the defining criteria for more than one hazard class, but it is assigned to only one hazard class.

Hazardous & Solid Waste Amendments (HSWA): Enacted as PL 98-616 in 1984 to address regulatory gaps in the RCRA program in the area of highly toxic wastes. These include regulation of carcinogens, listing and de-listing of hazardous wastes, permitting for hazardous waste facilities, leaking underground storage tanks, and the elimination of land disposal of hazardous wastes according to a congressionally mandated schedule.

Hazardous Constituent: The constituent identified in Appendix VIII to Chapter 11 of 22 CCR or any other element, chemical compound, or mixture of compounds that is a component of a hazardous waste or leachate and that has a physical or chemical property that causes the waste or leachate to be identified as a hazardous waste.

Hazardous Material: A substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce.

Hazardous Substance: A material and its mixtures or solutions identified by CERCLA and having a reportable quantity (RQ) (49 CFR, Subchapter C, §171.8). This definition applies when material is offered for transportation in one package or, if not packaged, in one transport vehicle. RQ values are listed in Appendix A to §172.101 for all hazardous substances.

Hazardous Waste: A hazardous waste as defined in 22 CCR §66261.3. The term includes acutely hazardous waste, extremely hazardous waste, non-RCRA hazardous waste, RCRA hazardous waste, special waste, and universal waste.

Hazardous Waste Constituent: A constituent that caused the U.S. EPA Administrator to list the hazardous waste in 40 CFR Part 261, Subpart D or a constituent listed in Table 1 of 40 CFR §261.24.

Household Hazardous Waste: Any hazardous waste generated incidental to owning and/or maintaining a place of residence. Household hazardous waste does not include any waste generated in the course of operating a business at a residence.

Identification Number or **ID Number:** The number applied for by and assigned to all handlers of hazardous waste. The ID number is business- and location-specific. A State ID number will be issued to generators of non-RCRA hazardous waste (HW) that produce ≤ 100 kg per calendar month of a RCRA HW or ≤ 1 kg of RCRA acute hazardous waste. The State ID number will have a prefix of three letters followed by nine numbers. A federal ID number (EPA ID number) is issued to generators of ≥ 100 kg per calendar month of a RCRA HW and/or > 1 kg per calendar month of acute HW, regardless of the amount of non-RCRA HW generated. The federal ID number will have a prefix of three letters followed by nine numbers. Federal facilities will have a prefix of two letters followed by ten numbers. Regardless of facility/company ownership, each non-contiguous (off-site) facility must have an individual ID number. While U.S. EPA only requires SQGs and LQGs of RCRA waste to obtain an EPA ID number, all generators of hazardous waste in California, except those that solely generate silver-only wastes, must have an identification number.

Ignitable: Capable of being set afire or of bursting into flame spontaneously or by interaction with another substance or material.

Incompatible Waste: A hazardous waste that is unsuitable for:

- Placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container inner liners or tank walls)
- Commingling with another waste or material under uncontrolled conditions because the commingling might produce heat/pressure, fire/explosion, violent reaction, toxic dusts, mists, fumes, or gases, or flammable fumes/gases

Individual Generation Site: The contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste but is still considered a single or individual generation site if the site or property is contiguous.

Inorganic Chemical: A large group of chemicals in which carbon atoms generally are not present. This includes oxides, acids, bases, and salts.

Interim Status: The authorization granted by U.S. EPA that allows a hazardous waste facility to continue to operate pending review of and decision on the facility's permit application.

Land Disposal: Placement in or on the land, except in a corrective action management unit, that includes but is not limited to placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine/cave, or concrete vault or bunker intended for disposal purposes.

Land Disposal Methods: Disposal of hazardous wastes on or into the land including but not limited to landfill surface impoundment, waste piles, deep-well injection, land spreading, and co-burial with municipal garbage; or treatment of hazardous wastes on or in the land, such as neutralization and evaporation ponds and land farming, in which the treatment residues are hazardous wastes and are not removed for subsequent processing or disposal within one year; or storage of hazardous wastes on or in the land, such as waste piles and surface impoundments other than neutralization and evaporation ponds, for longer than one year.

Land Disposal Restrictions (LDRs): Federally, a series of five rules, promulgated between November 1986 and May 1990 and as amended since, impacting all generators of hazardous wastes. LDRs are a result of the 1984 Hazardous and Solid Waste Amendments (HSWA) and, in California, SB 1500 (Roberti), which parallels the federal program at the state level, and were subsequently amended by SB 1222 (Calderon) in 1995.

Landfill: A disposal facility or part of a facility at which hazardous waste is placed in or on land and that is not a land treatment facility, surface impoundment, underground injection well, salt dome formation, slat bed formation, underground mine, cave, or corrective action management unit.

Large Quantity Generator (LQG): A RCRA large quantity generator is a person or facility generating ≥ 1,000 kg (2,200 lb) of RCRA hazardous waste or > 1 kg (2.2 lb) of acutely hazardous waste in any single calendar month. In California, the definition of a large quantity generator combines the volume of both non-RCRA and RCRA hazardous waste and acute or extremely hazardous waste in their respective quantities. It is important for California generators to know the respective amounts of RCRA and non-RCRA wastes produced.

Leachate: Any liquid, including any suspended components in the liquid that has percolated through or drained from hazardous waste.

Leak Detection System: A system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary containment structure. Such a system must employ operational controls (e.g., daily visual inspections for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to continuously and automatically detect the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure.

Listed Wastes: Wastes that appear on any one of the four lists of hazardous wastes contained in the RCRA regulations. These include wastes derived from manufacturing processes and from discarded commercial chemical products (federal waste codes starting with prefixes F, K, P, or U).

Management or **Hazardous Waste Management:** The handling, storage, transportation, processing, treatment, recovery, recycling, transfer, and disposal of hazardous waste.

Manifest: The shipping document (EPA 8700-22, Uniform Hazardous Waste Manifest) that is originated and signed by the generator or offeror in accordance with the instructions included in the appendix to Chapter 12 of 22 CCR.

Manifest Tracking Number: The alphanumeric box identification number that is pre-printed in box #4 of the manifest by a registered source approved by U.S. EPA to print manifests under 40 CFR §262.21(c,e).

Marking: A descriptive name, identification number, instructions, cautions, weight, specification, or UN marks, or combinations thereof, required by DOT on outer packagings of hazardous materials.

Maximum Organic Vapor Pressure: The sum of the individual organic constituent partial pressures exerted by the material contained in a tank, at the maximum vapor pressure-causing conditions (e.g., temperature, agitation, pH effects of combining wastes) reasonably expected to occur in the tank.

Maximum organic vapor pressure is determined using the procedures specified in 40 CFR Part 265.1084(c).

Melting Point: The temperature at which the solid and liquid forms of a substance exist in equilibrium.

Mixture: A material composed of more than one chemical compound or element.

No Detectable Organic Emissions: No escape of organics to the atmosphere as determined using procedures described in 40 CFR Part 265.1084(d).

Non-RCRA Hazardous Waste: Any hazardous waste that is regulated as hazardous waste in California and that is not defined as a RCRA hazardous waste. A hazardous waste is presumed to be a RCRA hazardous waste unless it is determined pursuant to 22 CCR §66261.101 that the hazardous waste is a non-RCRA hazardous waste.

Off-site: Any site that is not on-site.

On-site: The same or geographically contiguous property that may be divided by public or private right-of-way, provided the entrance/exit between the properties is at a crossroads intersection and access is achieved by crossing as opposed to going along the right-of-way. A noncontiguous property owned by the same person but connected by a right-of-way controlled by that person and to which the public does not have access is considered an on-site property. U.S. EPA amended the definition of *on-site* to include sites when the material can be transported to that site while remaining parallel or adjacent at all times to property owned by the generator (campus rule).

Packaging: A receptacle and any other components or materials necessary for the receptacle to perform its containment function in conformance with the minimum packing requirements of 49 CFR §171.8. The term includes containers, portable tanks, cargo tanks, tank cars, and multi-unit tank car tanks.

Part A: An application to DTSC or to U.S. EPA for a permit to operate a hazardous waste facility. The application is described in 22 CCR §66270.13.

Part B: The operation plan described in 22 CCR §§66270.14 through 66270.23 for a hazardous waste facility.

Permit by Rule: A provision of these regulations stating that a facility or activity is deemed to have a permit if it meets the requirements of the provision.

Permitted Facility: A facility that has received a hazardous waste facility permit from DTSC or U.S. EPA in accordance with HSC §25200 or RCRA.

Person: An individual, trust, firm, joint stock company, business concern, or corporation, including, but not limited to, a government corporation, partnership, and association. Person also includes any city, county, district, commission, the State or any department, agency, or political subdivision thereof, any interstate body, and the federal government or any department or agency thereof to the extent permitted by law.

Personnel or **Facility Personnel:** All persons who work at or oversee the operations of a hazardous waste facility and whose actions or failure to act may result in noncompliance with applicable requirements. Many of the requirements applicable to facility personnel are incorporated by reference and may apply to personnel working at generator sites.

Point of Waste Origination: When the facility owner or operator is the generator of the hazardous waste, the point of waste origination is the point where a solid waste produced by a system, process, or waste management unit is determined to be a hazardous waste as defined in 40 CFR Part 261 (also referred to as *point of generation*). When the facility owner or operator is not the generator of the hazardous waste, point of waste origination is the point where the owner or operator accepts delivery or takes possession of the hazardous waste.

Point of Waste Treatment: The point where a hazardous waste to be treated in accordance with 22 CCR §265.1083(c)(2) exits the treatment process. Any waste determination must be made before the waste is conveyed, handled, or otherwise managed in a manner that allows the waste to volatilize to the atmosphere.

Proper Shipping Name (PSN): Refers to the name of the hazardous material shown in Roman print (not italics) on the Hazardous Materials Table found in 49 CFR §172.101.

Publicly Owned Treatment Works (POTW): Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature that is owned by a state or municipality (as defined by 33 U.S.C. §1362). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment. While federal or

RCRA waste discharged to a POTW is regulated under the Clean Water Act (which may be excluded or allowed under specified conditions), no hazardous waste may be discharged to a POTW in California.

RCRA Hazardous Waste: All waste identified as a hazardous waste in Part 261 (commencing with §261.1) of Subchapter I of Chapter 1 of 40 CFR and appendices thereto.

Reactive: Having properties of explosivity or of chemical activity that can be a hazard to human health or the environment.

Recyclable Material: A hazardous waste that is capable of being recycled including but not limited to any of the following:

- A residue;
- A spent material including but not limited to a used or spent stripping or plating solution or etchant;
- Material that is contaminated to such an extent that it can no longer be used for the purpose for which it was originally purchased or manufactured;
- A byproduct listed in 22 CCR §66261.31 or §66261.32; AND/OR
- Any retrograde material that has not been used, distributed, or reclaimed through treatment by the original manufacturer or owner by the later of the following dates:
  - » One year after the date the material became a retrograde material
  - » If the material has been returned to the original manufacturer, one year after the material is returned to the original manufacturer

Registered Hazardous Waste Transporter: A transporter registered with DTSC to transport hazardous wastes.

Reportable Quantity (RQ): A specific quantity of hazardous materials meeting the reporting requirements of DOT or U.S. EPA (CERCLA) [see **Hazardous Substance**].

Residuals Repository: A hazardous waste facility or part of a facility that is permitted to accept (for land disposal) only nonliquid, treated hazardous waste (as specified in HSC §25204 and §25179.3). *Nonliquid* means not a liquid and containing less than 50 percent moisture by weight as determined in accordance with 22 CCR §66265.317.

Restricted Hazardous Waste: Any hazardous waste that is subject to land disposal restriction pursuant to HSC §25179.6 or 22 CCR Chapter 18.

Resource Conservation and Recovery Act (RCRA): Statute enacted in 1976 (RCRA, 42 USC §§6901 through 6987) as the first step in regulating the potential health and environmental problems associated with solid hazardous and non-hazardous waste disposal. RCRA, and the regulations developed by U.S. EPA to implement its provisions, provide the general framework of the national hazardous waste management system including the determination of whether hazardous wastes are being generated, techniques for tracking wastes to eventual disposal, and the design and permitting of hazardous waste management facilities. The purpose of RCRA is to achieve resource conservation, recovery, and reuse.

Retrograde Material: Any hazardous material that is not to be used, sold, or distributed for use in an originally intended or prescribed manner or for an originally intended or prescribed purpose and that meets any one or more of the following criteria:

- Has undergone chemical, biochemical, physical, or other changes due to the passage of time or the environmental conditions under which it was stored;
- Has exceeded a specified or recommended shelf life;
- Is banned by law, regulation, ordinance, or decree; AND/OR
- Cannot be used for reasons of economics, health/safety, or environmental hazard

Scrap Metal: Any one or more of the following, except as provided in subsection B of this section:

- Manufactured, solid metal objects and products
- Metal workings, including cuttings, trimmings, stampings, grindings, shavings and sandings
- Solid metal residues of metal production
- Printed circuit boards that are recycled

Scrap metal excludes all of the following:

- Lead-acid storage batteries, waste elemental mercury, and water-reactive metals such as sodium, potassium and lithium

- Magnesium borings, trimmings, grindings, shavings and sandings and any other forms capable of producing independent combustion
- Beryllium borings, trimmings, grindings, shavings, sandings and any other forms capable of producing adverse health effects or environmental harm in the opinion of DTSC
- Any metal contaminated with a hazardous waste, such that the contaminated metal exhibits any characteristic of a hazardous waste under Article 3 of Chapter 11 of this division
- Any metal contaminated with an oil that is a hazardous waste and that is free-flowing
- Sludges, fine powders, semi-solids, and liquid solutions that are hazardous wastes
- Any printed circuit board that has been removed from a universal waste electronic device by a universal waste handler as a result of the handler's conduct of activities authorized by regulations and is subject to management as a hazardous waste

Small Quantity Generator (SQG): A generator who generates < 1,000 kg (2,200 lb) of hazardous waste and ≤ 1 kg (2.2 lb) of acutely/extremely hazardous waste in any calendar month.

Soluble Threshold Limit Concentration (STLC): The concentration of a solubilized and extractable bioaccumulative or persistent toxic substance that, if equaled or exceeded in a waste or waste extract determined pursuant to 22 CCR, Chapter 11, Appendix II, renders the waste hazardous by the characteristic of toxicity.

Special Waste: A waste that is a hazardous waste only because it contains an inorganic substance or substances that cause it to pose a chronic toxicity hazard to human health or the environment, meets all of the criteria and requirements of 22 CCR §66261.122, and has been classified a special waste pursuant to 22 CCR §66261.124.

Spent Material: Any material that has been used and, as a result of contamination, can no longer serve the purpose for which it was produced without processing.

Storage: The holding of hazardous wastes for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

Subtitle C: The part of RCRA that pertains to the management of hazardous waste.

Superfund Amendments and Reauthorization Act (SARA): Enacted in 1986 to increase the Superfund to $8.5 billion, modify contaminated site cleanup criteria scheduling, and revise settlement procedures. It also provides a fund for leaking underground storage tank (LUST) cleanups and a broad, new emergency planning and community Right-to-Know Program (SARA Title III).

Surplus Material: An unused raw material or commercial product obtained with the intent to use or sell but that is no longer needed, and ownership of which is transferred to another person for use in a manner for which the material or product is commonly used. Surplus material is excess material and is neither of the following:

- A retrograde material as defined in this section
- A recyclable material as defined in this section

Tank: A stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) that provide structural support.

Title 8: The title of the California Code of Regulations that contains regulations promulgated by Cal/OSHA pertaining to worker safety and health.

Title 13: The title of California Code of Regulations that contains regulations promulgated by the CHP and pertaining to transportation.

Title 22: The title of California Code of Regulations that contains regulations pertaining to hazardous waste management and other related matters as promulgated by CalEPA.

Title 23: The title of California Code of Regulations that contains regulations pertaining to water quality and other related matters as promulgated by CalEPA.

Total Threshold Limit Concentration (TTLC): The combined (total) solubilized, extractable, and non-extractable concentration of a bioaccumulative or persistent toxic substance that, if equaled or exceeded in a waste, renders the waste hazardous.

Toxicity Characteristic Leaching Procedure (TCLP): U.S. EPA Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA Publication SW-846, as

incorporated by reference in 40 CFR §260.11, is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.

Toxic Waste: A hazardous waste designated by the U.S. EPA Administrator pursuant to 40 CFR §261.11. Toxic characteristics for waste classification are substantially different between RCRA and non-RCRA (California).

Transfer: The loading, unloading, pumping, or packaging of hazardous waste. *Transfer* does not include loading, unloading, pumping, or packaging of hazardous waste at the site where the hazardous waste is generated.

Transfer Facility or **Transfer Station:** Any transportation-related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of hazardous waste are held and/or transferred during the normal course of transportation.

Transporter: A person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

Transport Vehicle: A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle.

Transportable Treatment Unit: Any mobile equipment that performs a treatment [see **Treatment**], is transported onto a facility to perform treatment, and is not permanently stationed at a single facility.

Treatment: Any method, technique, or process that changes or is designed to change the physical, chemical, or biological character or composition of any hazardous waste or any material contained therein or remove or reduce its harmful properties or characteristics for any purpose including but not limited to energy recovery, material recovery, or reduction in volume.

Treatment, Storage, and Disposal Facility (TSDF): A hazardous waste facility at which hazardous waste is treated, stored, or disposed of on-site.

Universal Waste: Any of the wastes that are listed in 22 CCR §66261.9.

Used Oil: Oil that has been refined from crude oil or any synthetic oil that has been used and, as a result of use or as a consequence of extended storage or spillage, has been contaminated with physical or chemical impurities.

Variance: A deviation from a provision of 22 CCR and HSC Chapter 6.5 authorized pursuant to 22 CCR §66260.210 or HSC §25143.

Very Small Quantity Generator (VSQG): A generator who generates, in a calendar month, less than or equal to 100 kilograms (220 lb) of non-acute hazardous waste, 1 kilogram (2.2 lb) of acute hazardous waste listed in 40 CFR §261.31 or §261.33(e), or 100 kilograms (220 lb) of any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill into or on any land or water, of any acute hazardous waste. Previously, VSQGs were identified as CESQGs; this is a federal category that is not recognized in California.

Volatile Organic Concentration: The fraction, by weight, of the volatile organic compounds with a Henry's law constant value of at least 0.1 y/x contained in a hazardous waste expressed in terms of ppmw as determined by direct measurement or by knowledge of the waste in accordance with the requirements of 40 CFR Part 265.1084.

Water-Reactive: When contacted by water, having properties of reacting violently, generating extreme heat, burning, exploding, or rapidly reacting to produce an ignitable, toxic, or corrosive mist, vapor, or gas.

Waste Stabilization Process: Any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids as determined by Test Method 9095A (Paint Filter Liquids Test) in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. EPA Publication No. SW-846, First Edition, December 1996, Chapter 6.* A waste stabilization process involves mixing the hazardous waste with binders or other materials and curing the resulting hazardous waste and binder mixture. Other terms used to refer to this process are *waste fixation* or *waste solidification*. This does not include the adding of absorbent materials to the surface of a waste without mixing, agitation, or subsequent curing to absorb free liquid.

C. DOT/UN HAZARD CLASS DEFINITIONS

Explosive Materials – Class 1 [49 CFR §173.50]

Division 1.1 consists of explosives that have a mass explosion hazard. A mass explosion is one that affects almost the entire load instantaneously.

Division 1.2 consists of explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3 consists of explosives that have a fire hazard and a minor blast hazard and/or a minor projection hazard but not a mass explosion hazard.

Division 1.4 consists of explosive devices that present a minor explosion hazard. Explosive effects will be confined to the package.

Division 1.5 consists of very insensitive explosives. This division comprises substances that have a mass explosion hazard but are so insensitive that there is very little probability of initiation or transition from burning to detonation under normal conditions or transport.

Division 1.6 consists of extremely insensitive articles that do not have a mass explosive hazard. This division comprises articles that predominantly contain extremely insensitive substances that demonstrate a negligible probability of accidental initiation or propagation.

Gaseous Materials – Class 2 [49 CFR §173.115]

Division 2.1 includes any material that is a gas at ≤ 20°C (68°F) and 101 kPa (14.7 psi) of pressure and:

- Is ignitable when in a mixture of ≤ 13 percent by volume with air; OR
- Has a flammable range with air of at least 12 percent regardless of the lower limit

Division 2.2 materials are non-flammable, non-poisonous compressed gases and include compressed gas, liquefied gas, pressurized cryogenic gas, and compressed gas in solution. Division 2.2 indicates any material or mixture that:

- Exerts in the packaging an absolute pressure of 200 kPa (43.8 psia) at 20°C (68°F)
- Does not meet the definition of Division 2.1 or Division 2.3

Division 2.3 materials are poisonous and:

- Are known to be so toxic to humans as to pose a hazard to health during transportation; OR
- In the absence of adequate data on human toxicity, are presumed to be toxic to humans because, when tested on laboratory animals, they have an LC_{50} value of not more than 5,000 ppm

Flammable Liquids – Class 3 [49 CFR §173.120]

A flammable liquid is any liquid having a flash point of not more than 60°C (140°F).

Exceptions:

- Materials meeting the definition of any Class 2 material
- A mixture having one or more components with a flash point > 60°C (140°F) or higher that makes up ≥ 99 percent of the total volume of the mixture
- A liquid with a flash point > 35°C (95°F) that does not sustain combustion

A combustible liquid is any liquid that does not meet the definition of any other hazard class and that has a flash point > 60°C (140°F) and < 93°C (200°F).

Flammable Solids or Materials – Class 4 [49 CFR §173.124]

Division 4.1 includes any flammable solid materials of the following types:

- Desensitized explosives
- Self-reactive materials that are thermally unstable and that can undergo a strongly exothermic decomposition even without participation of oxygen
- Readily combustible materials that may cause fire through friction and show a burning rate faster than 2.2 mm (0.087 in) per second following specified test procedures or any metal powder than can be ignited and react over the whole length of a sample in 10 minutes or less when tested pursuant to specified test procedures

- Polymerizing materials that, without stabilization, are liable to undergo an exothermic reaction

Division 4.2 (Spontaneously Combustible) materials refer to any pyrophoric material, liquid, or solid that, even in small quantities and without an external ignition source, can ignite within five minutes after coming in contact with air under specified test conditions or generates heat when in contact with air.

Division 4.3 (Dangerous When Wet) material is one that, by contact with water, is liable to become spontaneously flammable or gives off flammable or toxic gas at a rate greater than one liter per kilogram of materials per hour under specified test procedures.

Oxidizers – Class 5 [49 CFR §173.127-128]

Division 5.1 (Oxidizer) materials are materials that, generally yielding oxygen, may cause or enhance the combustion of other chemicals.

Division 5.2 (Organic Peroxide) materials are organic compounds containing oxygen (O) in the bivalent -O-O- structure that may be considered a derivative of hydrogen peroxide when one or more of the hydrogen atoms have been replaced by organic radicals (with some exceptions).

Poisonous (Toxic) Materials – Class 6 [49 CFR §173.132 & §173.134]

Division 6.1 materials are those materials, other than gases, that are known to present a hazard to health during transportation or, in the absence of adequate data on human toxicity, are presumed to be toxic to humans when they fall within the specified oral, dermal, or inhalation toxicity ranges when tested on laboratory animals or are irritating materials with properties similar to tear gas, causing extreme irritation, especially in confined spaces.

Division 6.2 materials are infectious substances that are viable microorganisms or their toxins that cause or may cause disease in humans or animals.

A biological product is a virus, therapeutic serum, toxin, antitoxin, vaccine, blood, blood component or derivative, allergenic product, or arsphenamine or derivative of arsphenamine (or any other trivalent arsenic compound) applicable to the prevention, treatment, or cure of a disease or condition of human beings or animals.

Patient specimen refers to human or animal material collected directly from humans or animals and transported for research, diagnosis, investigational activities, or disease treatment or prevention including excreta, secreta, blood and its components, tissue and tissue swabs, body parts, and specimens in transport media.

Radioactive Materials – Class 7 [49 CFR §173.403]

Radioactive material is any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in the table in 49 CFR §173.435 or values derived according to the instructions in 49 CFR §173.433.

Corrosive Materials – Class 8 [49 CFR §173.136]

Corrosive material is a liquid or solid that causes full-thickness destruction of human skin at the site of contact or a liquid (or a solid that becomes a liquid during transportation) that has a severe corrosion rate on steel or aluminum > ¼ inch per year.

Miscellaneous Materials – Class 9 [49 CFR §173.140]

Miscellaneous hazardous material is material that presents a hazard during transport but that is not included in any other hazard class. Class 9 includes:

- Any material that has an anesthetic, noxious, or other similar property that could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties
- Any material that meets DOT's definition of an elevated temperature material, a hazardous substance, a hazardous waste, or a marine pollutant

D. ACRONYMS

AB: Assembly Bill

ACGIH: American Conference of Governmental Industrial

Hygienists; best known for developing TLVs for occupational chemical exposures

ACM: Asbestos-containing material

AST: Aboveground storage tank

AHERA: Asbestos Hazard Emergency Response Act of 1986

AHM: Acutely hazardous material

ANSI: American National Standards Institute

AEO: Administrative Enforcement Order

APCA: Air Pollution Control Association

APCD: Air Pollution Control District

APCO: Air Pollution Control Officer

APSA: Aboveground Petroleum Storage Act

AQMD: Air Quality Management District

ARB: Air Resources Board

ARC: American Red Cross

ASTM: American Society for Testing and Materials

BACT: Best available control technology

BADT: Best available demonstrated technology

BAT: Best available technology

BCPCT: Best conventional pollutant control technology

BDAT: Best demonstrated available technology

BDCT: Best demonstrated control technology

BDT: Best demonstrated technology

BLEVE: Boiling liquid expanding vapor explosion

BTEX: Benzene-toluene-ethylbenzene-xylene

BTU: British thermal unit

CA: Conditional authorization

CAA: Clean Air Act

CalEPA: California Environmental Protection Agency

Cal OES: Governor's Office of Emergency Services

Cal/OSHA: California Division of Occupational Safety and Health

CalRecycle: California's Department of Resources Recycling and Recovery

CCR: California Code of Regulations

CDPH: California Department of Public Health

CE: Conditional exemption

CEPRC: Chemical Emergency Planning and Response Commission

CEQA: California Environmental Quality Act

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

CESQUWG: Conditionally exempt small quantity universal waste generator

CFC: California Fire Code

CFR: Code of Federal Regulations

CHP: California Highway Patrol

CRT: Cathode ray tube

CUPA: Certified Unified Program Agency

CWA: Clean Water Act

DHCS: Department of Health Care Services

DOT: Department of Transportation

DPR: Department of Pesticide Regulation

DTSC: Department of Toxic Substance Control

EIR: Environmental Impact Report

EPCRA: Emergency Planning and Community Right-to-Know Act

FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act

FR: Federal Register

FTU: Fixed Treatment Unit

HAZWOPER: Hazardous waste operations and

emergency response

HHW: Household hazardous waste

HMR: Hazardous Materials Regulations

HMTA: Hazardous Materials Transportation Act

HMT-USA: Hazardous Materials Transportation Uniform Safety Act

HSC: California Health and Safety Code

HSWA: Hazardous and Solid Waste Amendments

HW: Hazardous waste

HWCL: Hazardous Waste Control Law

ICS: Incident Command System

IMO: International Maritime Organization

LC: Lethal concentration

LD: Lethal dose

LDR: Land disposal restrictions

LEL: Lower explosive limit

LFL: Lower flammable limit

LLRW: Low-Level Radioactive Waste

LQG: Large quantity generator

LUST: Leaking underground storage tank

NEPA: National Environmental Protection Act

NORM: Naturally Occurring Radioactive Material

NOV: Notice of Violation

NPDES: National Pollutant Discharge Elimination System

NPL: National Priorities List

NRC: (1) National Response Center; (2) Nuclear Regulatory Commission; (3) National Research Council; or (4) Non-Reusable Container (DOT)

OEHHA: Office of Environmental Health Hazard Assessment

OSHA: Occupational Safety & Health Administration

PBR: Permit by Rule

PCBs: Polychlorinated biphenyls

PHHWCF: Permanent Household Hazardous Waste Collection Facility

PHMSA: Pipeline and Hazardous Materials Safety Administration

POTW: Publicly Owned Treatment Works

PPB: Parts per billion

PPM: Parts per million

PSN: Proper shipping name

QA/QC: Quality assurance / quality control

RAP: Remedial Action Plan

RCRA: Resource Conservation and Recovery Act

RP: Responsible party

RQ: Reportable quantity

RWQCB: Regional Water Quality Control Board

RSPA: Research and Special Programs Administration

SIC: Standard industrial classification

SPCC: Spill prevention, control, and countermeasures

SQG: Small quantity generator

STLC: Soluble threshold limit concentration

SWMU: Solid Waste Management Unit

SWRCB: State Water Resources Control Board

TCLP: Toxicity characteristics leaching procedure

TLV: Threshold limit value

TPQ: Threshold planning quantity

TRI: Toxics Release Inventory

TSCA: Toxic Substances Control Act

TSDF: Treatment, storage, and disposal facility

TTLC: Total threshold limit concentration

TTU: Transportable treatment unit

UBC: Uniform building code

UEL: Upper explosive limit

UFL: Upper flammable limit

UFC: Uniform fire code

U.S. EPA: United States Environmental Protection Agency

UST: Underground storage tank

UW: Universal waste

VOC: Volatile organic compound

VSQG: Very small quantity generator

WET: Waste extraction test

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SECTION II: RECORDKEEPING & MANAGEMENT REQUIREMENTS

A. RECORDKEEPING & RECORDS MANAGEMENT

Hazardous waste regulations, as well as other environmental regulations, require companies to keep on file or to submit certain records that demonstrate compliance with regulatory requirements. A company or organization may produce and/or retain other documents that help the company manage its compliance efforts or help support its efforts to comply with regulatory requirements. These records must be well organized and carefully managed.

An inspector may ask to see certain records during an inspection to assess your company's compliance status. These records need to contain the required regulatory information and be readily available, well organized, and indexed when feasible. A CUPA/DTSC/EPA inspector may review manifests, Land Disposal Restriction (LDR) forms, container and tank inspection records, training records, waste determination records and analyses, reports/plans (e.g., Hazardous Materials Business Plan, SB 14 Plan, Biennial Report), and other documents that demonstrate compliance with applicable generator conditions.

Your company will likely produce records and/or standard operating procedures that help you manage your compliance efforts that are not required by regulation. Regardless, if these records help support your compliance efforts, you should retain these documents. Examples include spreadsheets to track waste shipments, accumulation timeframes, and waste generation volumes.

Do not underestimate the importance and value of creating and maintaining a good filing system. Document the filing system such that someone unfamiliar with the files can find an important document. Do not keep unnecessary records, but be sure you check the regulatory retention times before they are purged [see Table I on page 24 for regulatory retention times and recommended best management practices].

B. DETERMINING GENERATOR STATUS

The applicability of hazardous waste regulations can be affected by the type and volume of hazardous waste generated by a generator. In California, there are two generator categories based on the volume or quantity of hazardous waste generated (U.S. EPA recognizes three categories; however, California only recognizes two categories). The category in which a generator falls is commonly referred to as *generator status*.

The status is determined by the quantity of hazardous waste generated in a calendar month, not by the monthly average quantity. If the quantity threshold for a category is exceeded during any month of a calendar year, the generator is reclassified into the higher category until the volume of waste generated during the month has been shipped off-site for disposal. U.S. EPA may allow a single-month exception (episodic generation), particularly when the waste volume increase is due to an unusual occurrence or circumstance, such as spill cleanup or process equipment decommissioning; however, California does not have an "episodic generator" policy that allows a small quantity generator to exceed associated hazardous waste quantity thresholds "one or two times out of the calendar year" without changing generator status, provided that the hazardous waste produced in excess of small quantity allowances is managed pursuant to all applicable large quantity generator standards.

Large quantity generators (LQGs) are fully captured by applicable hazardous waste regulations, laws, and programs (such as SB 14 if meeting the threshold requirements). A generator producing ≥ 1,000 kg of RCRA and/or non-RCRA hazardous waste or > 1 kg of acute hazardous waste (federal criterion) and/or > 1 kg of extremely hazardous waste (State criterion) during any single calendar month is classified as an LQG.

Small quantity generators (SQGs) are generally captured by all hazardous waste management requirements, but some management standards are relaxed. The exceptions are discussed under the specific regulatory topics covered in this manual. A generator producing < 1,000 kg of RCRA and/or non-RCRA hazardous waste or ≤ 1 kg of acute and/

or extremely hazardous waste during any single calendar month is classified as an SQG.

Very small quantity generators (VSQGs) are exempt, for the most part, from RCRA regulations but are still covered by most of the California hazardous waste regulations that apply to SQGs. However, some California requirements are relaxed. The regulations apply unless a VSQG is exempted. A generator producing ≤ 100 kg of RCRA and/or non-RCRA hazardous waste or ≤ 1 kg of acute/extremely hazardous waste during any single calendar month is classified as a VSQG. The term *very small quantity generator* is actually a federal classification and is not used by the state of California. California has used the term *small quantity commercial source*, but, by practice, the terms *VSQG* or *CESQG* are more commonly used in California.

A generator's waste volume is not determined solely by the hazardous waste that is manifested and shipped off-site. The total volume of hazardous waste generated on-site counts toward the generator's status; this includes hazardous waste that was generated and subsequently treated on-site.

For example, if you have an on-site treatment permit, the total waste treated on-site (not just what remains hazardous and is manifested off-site) is counted in determining your generator status. Some exemptions exist, however. One such exemption would apply to silver-bearing waste from photo processing that is treated and recovered on-site without the use of a permit. The waste counts toward generator status only if accumulated in containers prior to silver recovery. Because of the silver-only exemption, the same waste is not counted toward generator status if the waste is piped or taken directly from the photo processor to the silver-recovery unit (i.e., no interim accumulation).

Facilities that generate universal waste are referred to as universal waste handlers. Universal wastes are defined in Section III of this manual. Universal wastes are lower-risk wastes that exhibit hazardous waste characteristics and may be managed under less restrictive standards. Conditionally exempt small quantity universal waste generators are based on the total generation of both RCRA hazardous waste and RCRA-regulated universal waste; the combined quantity cannot exceed 100 kilograms during any calendar month.

A universal waste handler is:

- A generator of universal waste;
- The owner or operator of a facility that receives universal waste from other universal waste handlers, accumulates universal waste, or sends universal waste to another universal waste handler, destination facility, or foreign destination; OR
- The owner or operator of a facility who is authorized to treat universal waste pursuant to 22 CCR and does not qualify as a CESQUWG

C. HAZARDOUS WASTE FEES

DTSC activities are funded from a variety of sources. Some of the funding comes from fees imposed on generators, transporters, and TSDFs for various activities. DTSC also receives funds from U.S. EPA, the Department of Defense, fines and penalties collected for violations of the hazardous waste control laws, reimbursement agreements, and cost recoveries from responsible parties. The DTSC fees include:

- Permitting activity fee
- Environmental fee
- Consultative service fee
- Land disposal fee
- EPA ID verification fee
- Facility fees
- Generator fees
- On-site treatment fee
- Manifest forms fee
- Manifest correction fee
- Manifest user fee

The fees that are most likely to affect generators are the land disposal, environmental, EPA ID verification, on-site treatment, generator, manifest forms, manifest correction, and manifest user fees. The other fees primarily affect TSDFs. DTSC issues an annual newsletter describing the fees.

Fees are also assessed and collected by most CUPAs. The fees differ by locality, but in most cases the fees are collected for each EPA ID number issued to the business in their jurisdiction. The CUPAs may collect fees for on-site treatment permits and a generator fee (the basis of the fee differs among CUPAs) for funding the cost of generator and other

inspections. A DTSC oversight fee is also assessed against each generator.

D. ESTABLISHING AN EPA ID NUMBER [22 CCR §66262.12]

Generators, transporters, and treatment, storage, and disposal facilities (TSDFs) must obtain an identification number issued by U.S. EPA or the Department of Toxic Substances Control (DTSC). All California hazardous waste generators must have an ID number; this requirement includes VSQGs but does not pertain to silver-only generators (who produce < 100 kilograms per month) and those generating only universal waste in quantities below 5,000 kilograms.

An EPA ID number can be obtained by submitting a completed RCRA Subtitle C Site Identification form (8700-12, most current revision) to the appropriate U.S. EPA regional office (Region 9 for California).

California ID numbers are obtained by submitting a completed DTSC Form 1358 to DTSC by mail, email, or fax.

If you produce > 100 kg of RCRA hazardous waste or > 1 kg of RCRA acute hazardous waste, your EPA ID number must be issued by U.S. EPA.

If your business only generates non-RCRA hazardous waste or generates ≤ 100 kg of RCRA hazardous waste or ≤ 1 kg of acutely hazardous waste, you must obtain a State ID number.

If your business only generates universal waste, you will only need an EPA ID number before accumulating 5,000 kilograms of U.S. EPA-regulated universal waste [40 CFR §273.32]; a State ID is required if the 5,000 kilograms consist of a combination of State and federal universal waste or solely of State-regulated universal waste.

NOTE: Universal waste handlers who receive universal waste electronic devices or CRT devices from other generators must file a notice of intent (DTSC Form 1382) 30 days prior to handling and submit an annual report each year to DTSC.

ID numbers are business- and location-specific (i.e., may not be used at another site or location). If you move your business or plan on moving or selling your business, a new ID number will be needed.

A separate ID number is required for each site where hazardous waste is generated.

Two exceptions to the "separate ID number" requirement involve remotely generated hazardous waste transported to consolidation sites under specific conditions and used oil collected during mobile maintenance operations where the used oil is transported (limited to 55 gallons) to a main facility for consolidation and proper management. In both instances, the ID number of the consolidation facility is all that is required.

If you have an EPA ID number and you sell or move your business, you must resubmit the U.S. EPA 8700-12 form. If you have a State ID number, notify DTSC in writing as soon as you move or sell your business. Include the following:

- The effective date of change
- The name of the new owner/business taking over the location (if applicable)
- For a new location, apply for a new EPA or State ID number, as applicable

An EPA ID number may be used by a new business entity at the same location, but only if the entity manages the same or similar type and quantity of hazardous waste. Advance authorization from U.S. EPA is required. The generator must notify DTSC upon receiving that authorization.

In any event, your business should have only one ID or EPA ID number per site. If you have multiple numbers associated with a single site (excluding portions of a single site leased to a separate entity), you must cancel all but one of the numbers.

E. CONTINGENCY PLANS [22 CCR §66265.51]

Large quantity generators (LQGs) are required to prepare a Contingency Plan. A Contingency Plan is a written document that spells out the actions a generator must take in the event of an emergency or accident involving hazardous wastes. The Contingency Plan provides a structured list of procedures that allow generators to respond immediately and appropriately to incidents such as:

- Fires
- Explosions
- Unplanned, sudden, or non-sudden releases or spills of hazardous wastes to the air, soil, or water

A Contingency Plan contains a number of procedures intended to assist generators and state and local agencies in responding to emergencies. The Contingency Plan:

- Designates an Emergency Coordinator(s)
- Sets forth emergency procedures
- Identifies emergency services and arrangements established to coordinate response actions with the service provider(s)
- Describes and lists available emergency equipment
- Establishes an evacuation plan
- Identifies the Cal OES contact

Small quantity generators (SQGs) are not required to have a written Contingency Plan under the hazardous waste regulations; however, SQGs are required to post a list of emergency contacts and the location of fire extinguishers, alarms, and spill control materials "next to telephones or in areas directly involved in the generation and accumulation of hazardous waste," per 40 CFR §262.16(a)(9)(ii).

F. BIENNIAL HAZARDOUS WASTE REPORTS [22 CCR §66262.41]

Generators of ≥ 1,000 kg of RCRA hazardous waste or > 1 kg of acute hazardous waste during any single calendar month in an odd-numbered year and sites that generated or accumulated more than 100 kg of spill cleanup material contaminated with RCRA acute hazardous waste are required to prepare and submit a report to DTSC every two years. These reports are due March 1st of an even-numbered year and summarize the facility's hazardous waste activities during the prior (odd-numbered) year. Non-RCRA large quantity generators are not required to file.

The Biennial Report Must Include:

- Facility's name, address, and EPA identification number
- Detailed information on each hazardous waste shipped off-site to a TSDF, including a description of the waste, EPA hazardous waste number, California hazardous waste code, quantity of each waste stream, source and origin of the waste, and treatment, storage, and disposal methods
- Name, address, and EPA identification number of each off-site TSDF to which waste was shipped during the year
- Name and EPA identification number of each transporter for shipments to hazardous waste facilities
- Information on waste minimization activities, including a description of the efforts undertaken to reduce the volume and toxicity of the waste generated and a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years
- Certification signed by the generator or authorized representative of the generator

Biennial Reports must be retained for at least three years from their due date.

G. SHIPPING DOCUMENTS

Manifests, Consolidated Manifests & LDR Forms

A copy of each manifest must be kept by the generator for three years from the date of shipment. Receipts for consolidated manifest shipments must be kept by the generator for three years from the date of shipment. At a minimum, LDR forms must be completed for the shipment of a restricted hazardous waste. The generator must keep a copy of the LDR form for three years from the date the hazardous waste was shipped off-site.

H. EXCEPTION REPORTS [22 CCR §66262.42]

Generators must receive the signed manifest copy (copy 3) from the TSDF within 35 days after transporting a shipment from their facility. However, there are circumstances when it takes longer for the waste to reach its destination. For example, the transporter may hold the waste at a transfer station to consolidate and maximize the load. The generator is responsible for knowing the status of its waste shipment. The waste should reach the designated facility within 35 days from the date

of shipment. A generator is required to check the status of the waste shipment if the TSDF-signed copy is not returned to the generator by the 35th day from the date the waste was shipped off-site. This usually involves a phone call to the TSDF. A TSDF will fax you a copy of the manifest if it received the waste. If it has not arrived, a call to the transporter may be needed. It is recommended that you document efforts made to locate your shipment and manifest.

If the generator cannot locate the shipment and does not obtain a copy of the signed manifest within the next 10 days (by the 45th day from shipment), the generator must file an exception report with DTSC. The report must be provided to DTSC no later than the 45th day from the day the waste was shipped off-site by an LQG and no later than the 60th day for an SQG. The exception report describes the efforts the generator took to locate the waste. As long as you obtain a copy of the signed manifest by the deadline, this is not an exception and does not need to be reported. The important thing is to ensure the waste reached its intended destination and that you obtain a copy of the TSDF-signed manifest.

I. ESTABLISHING A WASTE STREAM [22 CCR §66262.11]

It is important to track and characterize the various wastes you generate. Some hazardous wastes generated by a company may have unique waste characteristics. In these cases, it is important to characterize and profile your waste stream as soon as possible – *before* you approach and exceed your accumulation time limit.

A TSDF will require information about your wastes before it can accept them. In some cases, a sample of the waste for independent testing by the TSDF or copies of results from any testing the generator had performed may be required. The generator typically completes a Hazardous Waste Profile form and submits it to the TSDF. A waste stream profile number is issued once the waste has been approved for acceptance at the TSDF. This required information typically includes:

- Waste-generating process (provide as much detail as possible)
- Waste generation location
- Waste composition (chemical components and concentration)
- Estimated volume/weight
- Frequency of waste generation
- Type of shipping container
- Signature of generating supervisor

When completing the profile, you should provide as much detail as possible about the process and waste generated. Once all this information has been completed, forward your profile to the respective facility for review/approval. Waste profile forms are specific to the TSDF that will accept your waste. If the generator chooses to ship waste to an alternate TSDF, the generator will have to complete a new waste profile form.

The assigned profile number should be referenced on the proper labels and on the Uniform Hazardous Waste Manifest (box 14) and used to select appropriate containers for the waste shipment. These records must be kept for at least three years from the date the waste was sent off-site.

J. HAZARDOUS WASTE TRAINING

Hazardous Waste Generator Training [40 CFR §262.16(b)(9)(iii) & 22 CCR §66265.16]

All generators must train employees that generate hazardous wastes at their facility and employees and other personnel that affect the generator's compliance with hazardous waste regulations. For example, mechanics who generate used oil and other waste fluids and are responsible for temporarily accumulating that waste would need to understand the accumulation and container management requirements that apply to the scope of their job responsibilities. Their supervisors must also be trained because the decisions they make and the instructions they give to their employees can affect compliance with applicable regulations.

Generators need to assess whether contractors hired to manage or handle their hazardous waste or consultants hired to help the facility comply with hazardous waste regulations are properly trained. Companies should ensure that such contractors or consultants have received the required training, since their actions (or inactions) can affect compliance. Regulators would hold the generator, not the consultants/contractors, accountable for any violations.

Affected personnel must successfully complete a program of classroom or computer-based instruction or on-the-job training that teaches them to perform their duties in a way that ensures facility compliance with all applicable hazardous waste regulations. The trainer must have demonstrated competence (through experience and training) in hazardous waste management procedures and requirements. The training must teach personnel hazardous waste management procedures relevant to the positions in which they are employed. Training must also cover the facility's Contingency Plan such that personnel are capable of responding effectively to emergencies. This includes familiarizing them with emergency procedures, equipment, and emergency systems, including (where applicable):

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Communications or alarm systems
- Response to fires or explosions
- Response to groundwater contamination incidents
- Shutdown of operations, including key parameters for automatic waste feed cutoff systems, where applicable (such as those found on used oil tank systems)

Employees must be trained within six months after the date of their employment or of their assignment to a new facility or to a new position with different hazardous waste responsibilities. New employees cannot work in unsupervised positions until they have completed this training. LQG personnel must receive annual refresher training. Personnel engaged in hazardous waste shipping must be trained to meet the DOT training requirements outlined in 49 CFR §172.704. The training must be documented and comply with 22 CCR §66265.16.

SQGs must train their employees to properly perform their specific job functions and emergency procedures in accordance with 40 CFR §262.16(b)(9)(iii). SQG training does not have to be documented; however, documentation is strongly recommended.

Universal waste handlers are required to train personnel who manage universal waste. Personnel must be trained in the proper management of the universal waste and emergency response procedures relevant to their job duties. This training must be provided initially and annually thereafter, and the universal waste handler must maintain a written record of the training. This training is not required for those whose sole involvement with universal waste is placement into collection containers (e.g., spent battery accumulation) but is required for workers who mark, label, and/or otherwise manage accumulation containers and areas where universal waste is held.

Developing a Training Program

The following is an order of operations to consider in developing and maintaining your training program:

1. Make a list of employees whose jobs result in generating hazardous waste as well as those who can, by virtue of their positions, affect compliance with hazardous waste regulations.

2. Decide on the type (e.g., on-site vs. off-site, classroom vs. on-the-job, contractor vs. in-house trainer) and length of the training needed for each of the positions that handles hazardous wastes. Note that although DTSC's regulations do not specify the length and type of training, other agencies, such as Cal/OSHA, specify duration for certain classes (e.g., 40 hours for *40-Hour HAZWOPER* training and 8 hours for *First Responder Operations* training). It is not necessary for all personnel to train by attending a formal program. One approach would be to send only supervisory personnel to formal off-site training programs. The trained Supervisor can then provide more site-specific and/or on-the-job training sessions.

3. Design the written training program to be specific to the various positions performed by personnel. It should parallel as realistically as possible the actual job they perform. Take into account the educational level of employees. Make sure LQG personnel are familiar with the facility's Contingency Plan (SQG workers must be familiar with appropriate measures to take during hazardous waste emergencies); doing so will help to ensure an effective and coordinated response to site emergencies.

4. Document that the instructor is a person trained in hazardous waste management and that the training given to personnel enables employees to respond effectively to emergencies related to their tasks. Include documentation that they are familiar with the Contingency Plan.

5. Document that employees have been trained within six months of the date of their employment or transfer and that, until they are trained, they are only working under supervision.

6. Maintain training records for all personnel. Require contractors and consultants to provide evidence of training and keep those records on file.

Training Documentation

A TSDF and an LQG must maintain:

- The job title for each position at the facility related to hazardous waste management and the names of each employee filling the positions
- A written job description for each position listed above that includes the required skills, education, or other qualifications as well as duties of employees assigned to the position
- A written description of the type and amount of both introductory and continuing training that is given to each person filling a position related to hazardous waste management
- The type and amount of training that is given to fulfill the annual review requirement
- Records that document that the requirements for training or job experience have been met

Training records on current personnel must be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company. Universal waste handlers must keep training records for three years from the date the employee last managed universal waste. These records must be kept at the facility for examination by DTSC or authorized local agency upon request.

K. HAZARDOUS MATERIALS TRANSPORTATION (DOT) TRAINING [49 CFR §172.704]

Hazmat Employee Training

RCRA hazardous wastes are hazardous materials per 49 CFR and are, therefore, regulated by the Department of Transportation (DOT) when in transit. DOT requirements apply when shipping, receiving, and transporting these wastes by all modes of transportation (air, highway, rail, and water). Specific training requirements apply to any employee who packages, labels, marks, handles, loads, or transports a hazardous material or offers a hazardous material for transport. These workers are classified as *hazmat employees* by DOT. Specifically, hazmat employees include anyone who:

- Loads or unloads hazardous materials;
- Tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums, or packagings as qualified for use in the transportation of hazardous materials;
- Prepares or offers hazardous materials for transportation;
- Prepares or signs shipping papers (manifests);
- Is responsible for the safe transportation of hazardous materials; OR
- Operates a vehicle used to transport hazardous materials

More information on hazmat employee training is provided in Section V of this manual.

TABLE I. Generator Record-Retention Requirements & Practices

DOCUMENT	REGULATORY REQUIREMENT	BEST MANAGEMENT PRACTICE	REGULATORY REFERENCE
MANIFESTS	3 years from date of shipment	Forever	22 CCR 66262.40(a)
LDR NOTIFICATIONS	3 years from date waste was last shipped off-site	Forever	22 CCR 66268.7
LDR CERTIFICATIONS	3 years from date waste was last shipped off-site	Forever	22 CCR 66268.7
LDR DETERMINATIONS	3 years from date waste was last shipped off-site	Forever	22 CCR 66268.7
LDR WASTE ANALYSIS	3 years from date waste was last shipped off-site	Forever	22 CCR 66268.7
BIENNIAL/EXCEPTION REPORTS	3 years from date waste was last shipped off-site	Forever	22 CCR 66262.40(b)
WASTE DETERMINATION DATA	3 years from date waste was last shipped off-site	Forever	22 CCR 66262.40(c)
LQG TRAINING RECORDS, CURRENT EMPLOYEES	Until facility closure	Forever	22 CCR 66265.16
LQG TRAINING RECORDS, FORMER EMPLOYEES	3 years from last work day	Forever	22 CCR 66265.16
CONTINGENCY PLAN	Until facility closure	Forever	22 CCR 66265.53
NOTIFICATION (8700-12) ID NUMBERS	Not specified	Forever	22 CCR 66262.12(b)
CONTAINER INSPECTIONS	Not required	Forever	22 CCR 66265.174
TANK INSPECTIONS	3 years	Forever	22 CCR 66265.195
DRUM RECYCLER RECORDS	3 years	Forever	22 CCR 66261.7(g)
RECYCLABLE MATERIALS RECORDS	Not specified	Forever	HSC 25143.10
PCB BALLAST MANIFEST/SHIPPING DOCUMENTS	3 years	Forever	22 CCR 67426.1
WASTE MINIMIZATION	4 years	Forever	22 CCR 67100.3

SECTION III: HAZARDOUS WASTE IDENTIFICATION & CLASSIFICATION

A. OVERVIEW

The responsibility for determining whether a waste is a hazardous waste or a non-hazardous waste lies with the generator of that waste. The determination must be made at the point of generation (POG).

To make the determination of whether your business's wastes are hazardous, you may have to study information available on your raw materials, have tests performed on your wastes, or take other steps to accurately classify your wastes. Regulations [22 CCR §66262.11] allow a generator to either "apply knowledge of the hazard characteristics of the waste in light of the materials used in the process and the characteristics set forth in article 3 of chapter 11 of this division" or test the waste to assess whether the waste exhibits hazardous waste characteristics.

Knowledge of the process is not defined in regulation; however, U.S. EPA document *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual* (OSWER 9938.4-03) defines *process knowledge* as follows: "…whereby detailed information on the waste is obtained from existing published or documented waste analysis data or studies conducted on hazardous waste generated by processes similar to that which generated the waste." In other words, applying "knowledge" must be based on technical information that is documented and that supports the determination. For example, a generator could look at the constituents of F-, K-, P-, or U-listed wastes. It would also be appropriate to apply knowledge when sampling is too dangerous (unsafe to sample and analyze) or when the nature of the material makes it impractical to sample.

While testing can be expensive, a generator should consider the fact that disposing of waste as hazardous waste when it is not hazardous or improperly disposing of hazardous waste could cost much more. If testing is impractical or too costly, a generator has the option of concluding that the waste is hazardous waste and managing it as such. However, the generator is still responsible for properly classifying the waste. Therefore, the generator needs to possess basic knowledge of the waste and the process or processes generating the waste to determine whether the waste is listed or exhibits a hazardous waste characteristic. Transportation and disposal (e.g., LDR) requirements obligate generators to properly describe the characteristics of the waste so it can be packaged and transported safely and disposed of in a manner that meets disposal requirements. If a generator chooses to test a waste to determine if it is a hazardous waste, then a state-certified laboratory must be used.

The following information is provided to assist you in making this determination.

Hazardous Waste Determination [22 CCR §66262.11]

A person who generates a waste is to determine if that waste is a hazardous waste, at the point of generation, by first determining if the waste is excluded from regulation under 22 CCR §66261.4 or HSC §25143.2.

If not excluded, then the generator is to determine if the waste is listed as a hazardous waste in Article 4 of Chapter 11 or in Appendix X of Chapter 11 of 22 CCR, Section C. If the waste is listed in Appendix X (California Presumptive Wastes, non-RCRA, Section B) but is not listed in Article 4 of Chapter 11, the generator may determine that the waste from that particular facility or operation is not a hazardous waste by either:

- Testing the waste according to the methods set forth in Article 3 of Chapter 11 of 22 CCR or according to an equivalent method approved by DTSC; OR
- Applying knowledge of the hazard characteristics of the waste in light of the materials or the processes used and the characteristics of that process

If the waste is determined to be hazardous, the generator is to refer to Chapter 16 of 22 CCR for possible exclusions or restrictions pertaining to management of the specific waste.

If you know the chemical composition of your wastes, check to see if they are listed in one of the lists of hazardous wastes in 22 CCR Chapter 11,

Article 4, beginning with §66261.30 and Appendix X.

If not specifically listed, determine whether your waste exhibits one of the four hazard characteristics described in 22 CCR §66261.20-24 that would qualify it as a hazardous waste. This may be done by testing according to the methods outlined in 22 CCR §66693, et seq., or with an equivalent method approved by CalEPA. A state-certified laboratory should be used for any analysis required in order to ensure that acceptable methodology is employed, thereby obtaining more accurate results.

If you are still uncertain whether your facility produces hazardous wastes, check the SDS provided by the supplier or manufacturer. This form provides relevant health and hazard information regarding any chemical that has been identified as hazardous by its producer. It should be presumed that wastes resulting from use or other processing of hazardous materials and hazardous substances are hazardous wastes. The OSHA Hazard Communication Standard requires suppliers to provide data sheets to their customers to advise them of the hazards of the chemical products that their employees handle. The OSHA Hazard Communication Standard requires that there be an SDS for every hazardous chemical handled at your facility.

Definition of Waste [22 CCR §66261.2]

Waste means any discarded material of any form (liquid, semi-solid, solid, gaseous) that is not excluded by regulations or statutes. [22 CCR §66261.4(a) or §66261.4(e) or HSC §25143.2(d)]

A *discarded material* is a material that is any of the following:

- Relinquished by being disposed of, burned, or incinerated or accumulated, stored, or treated (but not recycled) before or in lieu of being relinquished by being disposed of, burned, or incinerated;
- Recycled, by being used in a manner constituting disposal (placed or applied to the ground), used to produce products that are applied to or placed on the ground, or burned for energy recovery by being reclaimed or accumulated speculatively; OR
- Considered inherently waste-like; this includes hazardous waste numbers F020, F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, and F028 and secondary materials fed to a halogen-acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste

A material is also considered a waste if it poses a threat to human health or the environment and meets either of the following:

- It is mislabeled or not adequately labeled, unless the material is correctly labeled or adequately labeled within 10 days after the material is discovered to be mislabeled or inadequately labeled; OR
- It is packaged in deteriorated or damaged containers, unless the material is contained in sound or undamaged containers within 96 hours after the containers are discovered to be deteriorated or damaged

Definition of Hazardous Waste [22 CCR §66261.3]

A waste, as defined previously, is a hazardous waste if it is not excluded as a hazardous waste under HSC §25143.2(b) or §25143.2(d) or under 22 CCR §66261.4 and if it:

- Exhibits any of the characteristics of hazardous waste identified in Article 3 (described later in this section), except any mixture of a waste from the extraction, beneficiation, and processing of ores and minerals;
- Is listed in 22 CCR, Division 4.5, Chapter 11, Article 4 and has not been excluded by U.S. EPA per 40 CFR §261 Subpart D, §260.20, and §260.22;
- Is listed in or contains a constituent listed in Appendix X of 22 CCR Chapter 11, unless it is determined that it does not meet the definition of a hazardous waste or is determined by the generator through generator knowledge or testing;
- Is a mixture of a hazardous waste listed in 22 CCR, Division 4.5, Chapter 11, Article 4, other than a hazardous waste listed with hazard code (X) [toxic] or (H) [acute], unless the resulting mixture no longer exhibits any characteristic of hazardous waste [see Mixture Rule later in this section], except for non-wastewater, which remains a hazardous waste even if it no longer

exhibits a characteristic of a hazardous waste at the point of land disposal; OR

- Is not classified as a hazardous waste by the criteria used in the regulations but conforms to the definition of a hazardous waste set forth in HSC §25117

Additionally, a waste is a hazardous waste if it is a mixture of a waste and one or more hazardous wastes listed in Article 4 that has not been excluded by U.S. EPA per 40 CFR Part §261 Subpart D, §260.20, and §260.22. The generator is to first determine if the waste is excluded from regulation under 22 CCR §66261.4 or HSC §25143.2. Unless a waste exhibits a characteristic of a hazardous waste or is listed in Article 4, the following wastes are excluded when subject to the Clean Water Act:

- One or more of the following spent solvents listed in 22 CCR §66261.31 (carbon tetrachloride, tetrachloroethylene, trichloroethylene) provided that the maximum total weekly usage of these solvents discharged in the wastewater divided by the average weekly flow of wastewater does not exceed 1 part per million
- One or more of the following spent solvents listed in 22 CCR §66261.31 (methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents) provided that the maximum total weekly usage of these solvents discharged in the wastewater divided by the average weekly flow of the wastewater discharge does not exceed 25 parts per million
- A discarded commercial chemical product or intermediate listed in 22 CCR §66261.33 arising from "de minimis" losses from manufacturing operations in which materials are used as raw material or are produced in the manufacturing process. De minimis losses include:
  - » Losses from normal material handling operations
  - » Minor leaks of process equipment, storage tanks, or containers
  - » Leaks from well-maintained pump packings and seals
  - » Sample purgings
  - » Relief device discharges
  - » Discharges from safety showers and rinsing and cleaning of personal safety equipment
  - » Rinsate from empty containers or from containers that are rendered empty by that rinsing
- Wastewater from laboratory operations that contains toxic (T) wastes, provided that the annualized average flow does not exceed 1% of the total wastewater flow and the combined annualized flow does not exceed 1 part per million
- One or more of the wastes listed in 40 CFR §261.32 from the production of carbamates and carbamoyl oximes (K156) if the concentration does not exceed an annualized average of 5 parts per million
- Wastewaters derived from the treatment of organic wastes listed in 40 CFR §261.32 from the production of carbamate and carbamoyl oximes (K157)

A waste that is not excluded from regulations as a hazardous waste becomes a hazardous waste when:

- The waste first meets the listing;
- A mixture when the hazardous waste listed in Article 4 is first added to the waste; OR
- The waste exhibits any of the characteristics identified in Article 3

Exclusions [22 CCR §66261.4]

The following materials are not wastes:

- Industrial wastewater discharges that are point source discharges subject to regulations under Section 402 of the Federal Clean Water Act, 33 U.S.C. §1342, but applies only to the actual point source discharge — it does not exclude industrial wastewaters while they are collected, stored, or treated before discharge, nor does it exclude sludges generated by the industrial wastewater treatment
- Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, 42 U.S.C. §2011 et seq.
- Spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively

- Pulping liquors reclaimed in a pulping liquor recovery furnace and reused in the pulping process, unless accumulated speculatively
- Secondary materials reclaimed and returned to the original process or processes from which they were generated where they are reused in the production process provided that:
  - » Only tank storage is involved and in a closed-loop system
  - » No flame combustion is involved
  - » The materials are not accumulated in tanks for over 12 months without being reclaimed
  - » Reclaimed material is not used to produce a fuel or used in a manner that constitutes disposal

The following wastes are not hazardous wastes:

- Infectious wastes that consists solely of animal carcasses
- Materials exempted or excluded from classification as solid waste or hazardous waste per 40 CFR 261.4 that do not exhibit a characteristic of hazardous waste
- Used oil refining distillation bottoms used as feedstock to manufacture asphalt products
- Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment (e.g., mobile A/C systems, mobile refrigeration, commercial or industrial A/C and refrigeration)
- Solid waste that meets the classification as a RCRA hazardous waste but is from the extraction, beneficiation, and processing of ores and minerals
- Hazardous wastes exempted from regulations such as hazardous waste generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit
  - » **NOTE:** This exclusion applies only until the waste exits the unit or remains in a non-operational unit for more than 90 days or unless the unit is a surface impoundment; hazardous waste and the unit are regulated if sludge is generated and deposited at the bottom of the unit, the unit is not otherwise exempt, or if the unit is a waste management unit; federally, wastewater treatment systems are exempt, but in California the wastewater and POTW exemptions do not exist, and the sludge in a wastewater treatment systems would be regulated at the point of disposition
- Samples collected for the purpose of testing to determine characteristics or composition of a waste
- Treatability study samples, as defined and under certain conditions set forth in 22 CCR §66261.4(e-f)
- Controlled substances, as defined and under certain conditions set forth in 22 CCR §66261.4(g)
- CRT panel glass

Recycling Exclusions [40 CFR §261.2(e) & HSC §25143.2]

In general terms, materials that are not solid wastes, when recycled, qualify under the recycling exclusion. The definition of solid waste is broad; however, any material that is used in a manner constituting disposal, burned for energy recovery, accumulated speculatively, or reclaimed is a solid waste and therefore does not qualify. Sludges, byproducts, and listed or unlisted commercial chemical products that exhibit hazardous waste characteristics may also qualify as solid wastes and therefore may not qualify under the exclusion.

Materials are not solid wastes when they can be shown to be recycled by being used or reused as an ingredient to produce a product, without being reclaimed and used or reused as a substitute for a commercial product, provided that such materials are not:

- Used in a manner constituting disposal (placed on land or used to produce products that are placed on land);
- Burned for energy recovery (burned directly to recover energy or used to produce a fuel);
- Accumulated speculatively (if during a calendar year, 75% of the recyclable material accumulated as of January 1 of that year has not been recycled); OR

- Inherently waste-like (materials listed in 40 CFR §261.2[d] [chlorinated dioxins and dibenzofurnas], F020, F021, F022, F023, F026, and F028)

The term "used or reused" means that it is used directly as an ingredient in a production process or as a substitute for a commercial product without the recovery of distinct components as separate end products (i.e., something is extracted, refined, etc. from that waste for reuse, but not the entire waste). *Reclaimed* means processed to recover a usable product or regenerated, such as recovering lead from spent batteries or the cleaning of used solvents.

In California, we exclude wastes that qualify as excluded recyclable materials from the definition of hazardous waste.

The exclusion is identical to the federal language, but the exclusion set forth in HSC §25143.2(d) applies only to non-RCRA hazardous wastes and allows some limited reclamation activities. The federal limitations such as "used in a manner constituting disposal," and so forth, are identical, and in California, the person making a claim of exclusion must be able to demonstrate that there is a known market or disposition for the recyclable material and the material meets the terms of the exclusion. To qualify, the material can be recycled at a facility without authorization if the material is a petroleum refinery waste containing oil that is converted to coke at the same location unless the result is that it becomes a hazardous waste or if the material is recycled and used at the same facility at which it is generated, recycled within 90 days of generation, and managed in accordance with applicable generator requirements. Specified recordkeeping requirements also must be met (e.g., labeling as "Excluded Recyclable Material," providing specified information to the CUPA if recycling more than 100 kg per month, etc.).

Point of Generation [22 CCR §66260.10]

The determination of whether a waste is hazardous or non-hazardous must be applied to the waste at the point of generation (POG). *Point of waste origination* under California regulations means "… the point where a solid waste produced by a system, process, or waste management unit is determined to be a hazardous waste."

Some examples of POG include:

- Waste exits a non-waste unit or piece of equipment (e.g., radiator, parts-washer)
- Waste exits a manufacturing process unit
- Material is spent and a decision to discard or recycle is made
- Decision is made to discard a P- or U-listed chemical
- Treatment residue exits a treatment unit
- Residue exits a recycling unit

When wastes are commingled with other waste streams, DTSC requires waste identification and classification to be made at the point the waste is generated, prior to the commingling, even if the commingling occurs within a pipe (except in a totally enclosed treatment system). One exception is when the point of generation for tank cleanouts occurs at the end of the rinseouts in the receiving rinsate tank, even though the first rinse is likely to be of higher concentration than the other rinses.

When waste remains within a process unit, the point of generation occurs when the waste is removed or leaves the unit, not while it is generated within the industrial process unit. However, if the hazardous waste remains in the unit for more than 90 days after the unit ceases to operate for manufacturing purposes or for storage or transportation of the product or raw material, it becomes a hazardous waste even while it remains in the unit. If the "process" is a waste handling or treatment unit (i.e., it has left the process and is now an integral part of the waste handling or treatment unit, not a part of the process), the POG may be in the waste collection/accumulation tank itself (if waste or any portion of it removed from that tank is or becomes hazardous). For example, if a discharge from a process unit was non-hazardous when it left the "process" and then is accumulated in a tank, and sludge settling out from that waste in the tank is subsequently removed and is hazardous, then the POG occurs in the tank prior to its removal. Therefore, the POG is when the waste entered the waste tank, and that tank would be classified as a hazardous waste tank.

Point of generation is critical when assessing whether hazardous waste treatment is occurring and in determining the volume and applicability of the appropriate treatment or permit tier. As an example, three waste streams exit from various points of a process system or unit, and one of

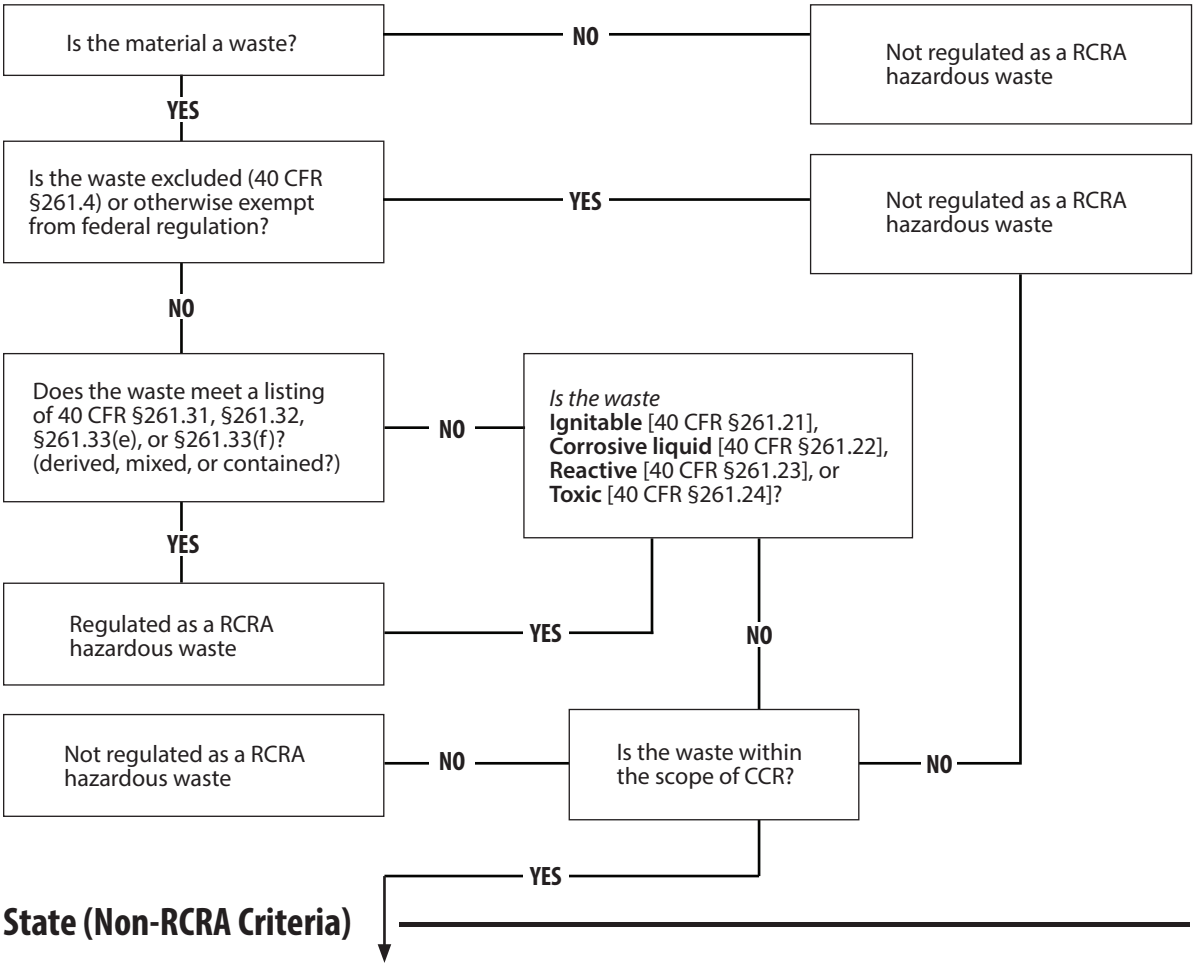
the waste streams is hazardous. Even though the resulting mixture does not exhibit hazardous waste characteristics, on-site treatment of the mixture would require an on-site treatment permit. The treatment volume would be the volume of the mixture, while eligibility under one of the various treatment tiers would be based on the most stringent of the regulatory requirements applicable to each individual waste stream (characteristics of the waste stream that is hazardous, prior to commingling). [HSC §25123.4(b)(1)]

B. BRIEF COMPARISON OF CALIFORNIA VS. FEDERAL CLASSIFICATION SCHEMES

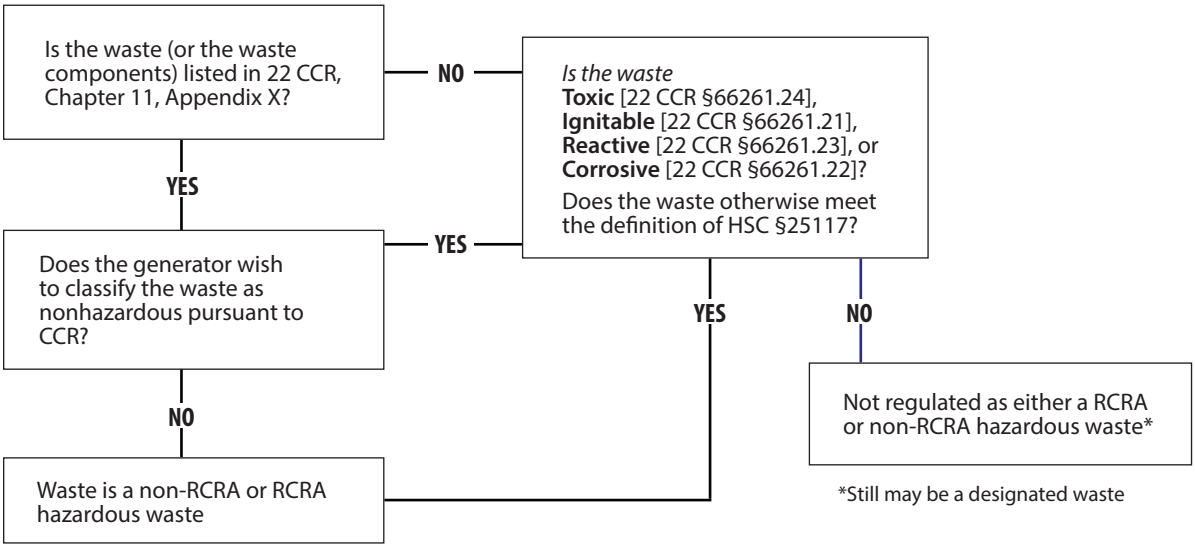
	CALIFORNIA (NON-RCRA)	FEDERAL (RCRA)
Agency	California EPA Department of Toxic Substances Control Program	U.S. Environmental Protection Agency
Law	Hazardous Waste Control Law	RCRA (TSCA for asbestos & PCBs)
Regulations	22 CCR Division 4.5	40 CFR Parts 124, 260-268, 270
Definition	HSC §25117	RCRA 1004(5)
Characteristics	**Ignitability** **Corrosivity** • Liquids and aqueous solutions • Non-liquids, non-aqueous solutions (i.e., solids) **Reactivity** **Toxicity** • Soluble concentration (using the Waste Extraction Test) » 19 inorganics » 18 organics • Total concentration » 20 inorganics » 18 organics • Acute toxicity » Oral LD_{50} » Dermal LD_{50} » Inhalation LC_{50} • Aquatic toxicity 96-hour LC_{50} • 16 carcinogens at 0.001% • Chronic toxicity	**Ignitability** **Corrosivity** • Only liquids and aqueous solutions **Reactivity** **Toxicity** • Soluble concentration (using the Toxicity Characteristic Leaching Procedure) » 8 heavy metals » 6 pesticides » 26 organics
Lists	Used as presumptive hazard (22 CCR Chapter 11, Appendix 10); Mercury-bearing articles, 22 CCR §66261.50	F, K, P, U
Categories	RCRA hazardous waste Extremely hazardous waste Non-RCRA hazardous waste Special waste	Hazardous waste Acute hazardous waste
Variance	Administrative	Rulemaking

C. WASTE CLASSIFICATION FLOWCHART

Federal RCRA Criteria Flowchart



State (Non-RCRA Criteria)



*Still may be a designated waste

D. HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

Non-Specific Wastes (RCRA Listed) [22 CCR §66261.31]

The following wastes are listed hazardous wastes from non-specific sources unless they are excluded pursuant to 40 CFR §260.20 and §260.22.

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-tri-fluoroethane, ortho-dichlorobenzene trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent mixtures/blends containing, before use, one or more of the above non-halogenated solvents and a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I)
F004	The following spent non-halogenated solvents: cresols, cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitro-propane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvent mixtures	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: sulfuric acid anodizing of aluminum; tin plating on carbon steel; zinc plating (segregated bases) on carbon steel; aluminum or zinc-aluminum plating on carbon steel; cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and chemical etching and milling of aluminum	(T)
F007	Spent cyanide plating bath solutions from electro-plating operations	(R,T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process	(R,T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations	(R,T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process	(T)

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetra-chlorophenol or of intermediates used to produce their pesticide derivatives (this listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for production or the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetra-chlorophenols (this listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachloro-phenols (this listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F024	Process wastes including but not limited to distillation, residues, heavy ends, tars, and reactor cleanout wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to five, with varying amounts and positions of chlorine substitution (this listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in 22 CCR §66261.31 or §66261.32)	(T)
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to five, with varying amounts and positions of chlorine substitution	(T)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols (this listing does not include formulations containing hexachlorophenol as the sole component)	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with U.S. EPA hazardous waste numbers F020, F021, F022, F023, F026, and F027	(T)
F032	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood-preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 22 CCR §66261.35 or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes [i.e., F034 or F035] and where the generator does not resume or initiate use of chlorophenolic formulations); this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood-preserving processes that use creosote and/or pentachlorophenol	(T)

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood-preserving processes generated at plants that use creosote formulations; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood-preserving processes that use creosote and/or pentachlorophenol	(T)
F035	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood-preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood-preserving processes that use creosote and/or pentachlorophenol	(T)
F037	Petroleum refinery primary oil/water/solids separation sludge: any sludge generated from the gravitational separation of oil/water/solids during the storage of treatment of process wastewaters and oily cooling wastewaters from petroleum refineries; such sludges include but are not limited to those generated in oil/water/solids separators, tanks and impoundments, ditches and other conveyances, sumps, and stormwater units receiving dry weather flow; sludges generated in stormwater units that do not receive dry weather flow, sludges generated for non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in 22 CCR §66261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units), and K051 wastes are not included in this listing	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge: any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries; such wastes include but are not limited to all sludges and floats generated in induced air flotation (IAF) units, tanks and impoundments, and all sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters (sludges and floats generated in aggressive biological treatment units and F037, K048, and K051 wastes are not included in this listing)	(T)
F039	Leachate (liquids that have percolated through land disposal wastes) resulting from the disposal of more than one restricted waste classified as hazardous under article 4 of 22 CCR, Division 4.5, Chapter 11 (leachate resulting from the disposal of one or more of the following U.S. EPA hazardous wastes and no other hazardous wastes remains its U.S. EPA hazardous waste number(s): F020, F021, F022, F026, F027, and/or F028)	(T)

E. HAZARDOUS WASTES FROM SPECIFIC SOURCES [22 CCR §66261.32]

The following wastes are listed hazardous wastes from specific sources unless they are excluded pursuant to 40 CFR §260.20 and §260.22.

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
Wood Preservation		
K001	Bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote and/or pentachlorophenol	T
Inorganic Pigments		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	T
K003	Wastewater treatment sludge from the production of molybdate orange pigments	T

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
K004	Wastewater treatment sludge from the production of zinc yellow pigments	T
K005	Wastewater treatment sludge from the production of chrome oxide green pigments	T
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	T
K007	Wastewater treatment sludge from the production of iron blue pigments	T
K008	Oven residue from the production of chrome oxide green pigments	T
	Organic Chemicals	
K009	Distillation bottoms from the production of acetaldehyde from ethylene	T
K010	Distillation side cuts from the production of acetaldehyde from ethylene	T
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	R,T
K013	Bottom stream from the acetonitrile purification column in the production of acrylonitrile	R,T
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	T
K015	Still bottoms from the distillation of benzyl chloride	T
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	T
K017	Heavy ends still bottoms from the purification column in the production of epichlorohydrin	T
K018	Heavy ends from the fractionation column in ethyl chloride production	T
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	T
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	T
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	T
K022	Distillation bottom tars from the production of phenol/acetone from cumene	T
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	T
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	T
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	T
K026	Stripping still tails from the production of methyl ethyl pyridines	T
K027	Centrifuge and distillation residues from toluene diisocyanate production	R,T
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	T
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	T
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	T

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
K083	Distillation bottoms from aniline production	T
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	T
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	R,T
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	R,T
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	T
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	T
K103	Process residues from aniline extraction from the production of aniline	T
K104	Combined wastewater streams generated from nitrobenzene/aniline production	T
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	T
K107	Column bottoms from product separation from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazines	C,T
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	I,T
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	T
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazides	T
K111	Product wash waters from the production of dinitrotoluene via nitration of toluene	C,T
K112	Reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	T
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	T
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	T
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	T
K116	Organic condensate from the solvent recovery column in the production of toluene disocyanate via phosgenation of toluenediamine	T
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	R,T
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	T
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	T
K149	Distillation bottoms from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups (this waste does not include still bottoms from the distillation of benzyl chloride)	T

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups	T
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides and compounds with mixtures of these functional groups	T
K156	Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (this listing does not apply to wastes generated from the manufacture of 3-iodo-2 propynyl n- butylcorbamate)	R,T
K157	Wastewaters (including scrubber waters, condenser waters, wastewaters, and separation waters) from the production of carbamates and carbamoyl oximes	R,T
K158	Baghouse dusts and filter/separation solids from the production of carbamates and carbamoyl oximes	T
K159	Organics from the treatment of thiocarbamate wastes	T
K161	Purification solids (including filtration, evaporation, and centrifugation solids), baghouse dustand floor sweepings from the production of dithiocarbamate acids and their salts (this listing does not include K125 or K126)	R,T
K174	Wastewater treatment sludges from the production of ethylene dichloride or vinyl chloride monomer (including sludges that result from commingled ethylene dichloride or vinyl chloride monomer wastewater and other wastewater), unless the sludges meet the following conditions: (i) they are disposed of in a subtitle C or non-hazardous landfill licensed or permitted by the state or federal government; (ii) they are not otherwise placed on the land prior to final disposal; and (iii) the generator maintains documentation demonstrating that the waste was either disposed of in an on-site landfill or consigned to a transporter or disposal facility that provided written commitment to dispose of the waste in an off-site landfill; respondents in any action brought to enforce the requirements of subtitle C must, upon a showing by the government that the respondent managed wastewater treatment sludges from the production of vinyl chloride monomer or ethylene dichloride, demonstrate that they meet the terms of the exclusion set forth above; in doing so, they must provide appropriate documentation that the terms of the exclusion were met (e.g., contracts between the generator and the landfill owner/operator, invoices documenting delivery of waste to landfill, etc.)	T
K175	Wastewater treatment sludges from the production of vinyl chloride monomer using mercuric chloride catalyst in an acetylene-based process	T
Inorganic Chemicals		
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	T
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	T
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	T
Pesticides		
K031	Byproduct salts generated in the production of MSMA and cacodylic acid	T
K032	Wastewater treatment sludge from the production of chlordane	T

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
K033	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	T
K034	Wastewater and scrub water from the chlorinating of chlorination in the production of chlordane	T
K035	Wastewater treatment sludges generated in the production of creosote	T
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	T
K037	Wastewater treatment sludges from the production of disulfoton	T
K038	Wastewater from the washing and stripping of phorate production	T
K039	Filter cake from the filtration of diethyl-phosphorodithioic acid in the production of phorate	T
K040	Wastewater treatment sludge from the production of phorate	T
K041	Wastewater treatment sludge from the production of toxaphene	T
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2, 4, 5-T	T
K043	2, 6-Dichlorophenol waste from the production of 2, 4-D	T
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	T
K098	Untreated process wastewater from the production of toxaphene	T
K099	Untreated wastewater from the production of 2, 4-D	T
K123	Process wastewater (including supermates, filtrates, and wash waters) from the production of ethylenebisdithiocarbamic acid and its salts	T
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	C,T
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts	T
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts	T
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide	C,T
K132	Spent absorbent and wastewater separator solids from the production of methyl bromide	T
Explosives		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	R
K045	Spent carbon from the treatment of wastewater containing explosives	R
K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiation compounds	T
K047	Pink/red water from TNT operations	R

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
	Petroleum Refining	
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	T
K049	Slop oil emulsion solids from the petroleum refining industry	T
K050	Heat exchanger bundle-cleaning sludge from the petroleum refining industry	T
K051	API separator sludge from the petroleum refining industry	T
K052	Tank bottoms (leaded) from the petroleum refining industry	T
K169	Crude oil storage tank sediment from petroleum refining operations	T
K170	Clarified slurry oil tank sediment and/or in-line filter separation solids from petroleum refining operations	T
K171	Spent hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media)	I,T
K172	Spent hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media)	I,T
	Iron And Steel	
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	T
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC codes 331 and 332)	C,T
	Primary Aluminum	
K088	Spent potliners from primary aluminum reduction	T
	Secondary Lead	
K069	Emission control dust/sludge from secondary lead smelting (NOTE: this listing is stayed administratively for sludge generated from secondary acid scrubber systems; the stay will remain in effect until further administrative action is taken; if U.S. EPA takes further action affecting this stay, U.S. EPA will publish a notice of the action in the Federal Register)	T
K100	Waste-leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	T
	Veterinary Pharmaceuticals	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	T
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	T
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	T
	Ink Information	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, dryers, soaps, and stabilizers containing chromium and lead	T

EPA HAZARDOUS WASTE NO.	HAZARDOUS WASTE	HAZARD CODE
	Coking	
K060	Ammonia still lime sludge from coking operations	T
K087	Decanter tank tar sludge from coking operations	T
K141	Process residues from the recovery of coal tar including but not limited to collecting sump residues from the production of coke from coal or the recovery of coke byproducts produced from coal (this listing does not include K087 decanter tank tar sludges from coking operations)	T
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke byproducts produced from coal	T
K143	Process residues from the recovery of light oil including but not limited to those generated in stills, decanters, and wash oil recovery units from the recovery of coke byproducts produced from coal	T
K144	Wastewater sump residues from light oil refining including but not limited to intercepting or contamination sump sludges from the recovery of coke byproducts produced from coal	T
K145	Residues from naphthalene collection and recovery operations from the recovery of coke byproducts produced from coal	T
K147	Spent hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media)	T
K148	Residues from coal tar distillation including but not limited to still bottoms	T

F. DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, & SPILL RESIDUES THEREOF (RCRA LISTED) [22 CCR §66261.33(e-f)]

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in 40 CFR §261.2(b):

1. Any commercial chemical product or manufacturing chemical intermediate having the generic name listed in subsection e or f of this section. The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in..." refers to a chemical substance that is manufactured or formulated for commercial or manufacturing use that consists of the commercially pure grade of the chemical, any technical grades of the chemical, or any formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in subsection e or f of this section. Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in subsection e or f of this section, such waste will be listed in either 22 CCR §66261.31 or §66261.32 or will be identified as a hazardous waste by the characteristics set forth in Article 3 of this chapter.

2. Any off-specification commercial chemical product or manufacturing chemical intermediate that, if it met specifications, would have the generic name listed in subsection e or f of this section.

3. Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in subsection e or f of this section.

4. Any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in subsection e or f of this section, or any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill into or on any land or water, of any off-

specification chemical product and manufacturing chemical intermediate that, if it met specifications, would have the generic name listed in subsection e or f of this section.

5. The following commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates referred to above are acute hazardous wastes. The primary hazardous properties of these materials have been indicated by the letters T (toxicity) and R (reactivity). Absence of a letter indicates that the compound is only listed for acute toxicity. These wastes and their corresponding U.S. EPA hazardous waste numbers follow.

Acute Hazardous Wastes

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide (R,T)
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P099	Argentate (1-), bis (cyano-C)-, potassium
P010	Arsenic acid H_3AsO_4
P012	Arsenic oxide As_2O_3
P038	Arsine, diethy
P036	Arsonous dichloride, phenyl-
P054	Aziridine
P067	Aziridine, 2-methyl-
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	Benzeneethanamine, alpha, alpha-dimethyl-
P014	Benzenethiol
P001	2H-1-Benzopyran-2-one, 4-hydroxy-3- (3-oxo-1phenylbutyl)-, and salts when present at concentrations greater than 0.3
P028	Benzyl chloride
P015	Beryllium dust
P017	Bromoacetone
P018	Brucine
P045	2-Butanone, 3,3-dimethyl-1-(methylthio)-, o-[(methylamino) carbonyl] oxime
P021	Calcium cyanide $Ca(CN)_2$
P022	Carbon disulfide
P095	Carbonic dichloride
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl) thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide Cu(CN)
P030	Cyanides (soluble cyanide salts), not otherwise specified
P031	Cyanogen
P033	Cyanogen chloride (CN)Cl
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O, O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropylfluorophosphate (DFP)
P004	1,4,5,8-Dimethanonaphthalene, 1,2,3,4-,10,10-hexachloro-1,4,4a ,5,8,8a-hexahydro-,(1alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-
P060	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5, 8, 8a, hexahydro-, (1alpha, 4alpha, 4abeta, 5beta, 8beta, 8abeta)
P037	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro- la,2,2a,3,6,6a,7,7a-octahydro- ,(laalpha, 2beta, 2abeta, 3alpha, 6beta, 6alpha, 6abeta, 7beta, 7aalpha)-, and metabolites
P051	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro- la,2,2a,3,6,6a,7,7a-octahydro- ,(1aalpha, 2beta, 2abeta, 3alpha, 6beta, 6alpha, 6abeta, 7beta, 7aalpha)-, and metabolites
P044	Dimethoate
P046	alpha,alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramide, octamethyl-
P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P050	Endosulfan
P088	Endothall
P051	Endrin, and metabolites
P042	Epinephrine

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P031	Ethanedinitrile
P066	Ethanimidothioic acid, N-[[(methylamino) carbonyl] oxy]-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P198	Formetanate hydrochloride
P197	Formparanate
P065	Fulminic acid, mercury (2+) salt (R,T)
P059	Heptachlor
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P060	Isodrin
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury, (acetato-O)phenyl-
P065	Mercury fulminate (R,T)
P082	Methanamine, N-methyl-N-nitroso-
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro- (R)
P118	Methanethiol, trichloro-
P050	6,9-Methano-2,4,3-benzodioxathie- pen, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methyllactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl, $Ni(CO)_4$, (T-4)-
P074	Nickel cyanide $Ni(CN)_2$
P075	Nicotine and salts
P076	Nitric oxide NO
P077	p-Nitroaniline
P078	Nitrogen dioxide NO_2
P081	Nitroglycerine (R)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P085	Octamethylpyrophosphoramide
P087	Osmium oxide OsO_4, (T-4)-
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,5-dinitro-
P047	Phenol, 2-methyl-4,6-dinitro- and salts
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P096	Phosphine

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P041	Phosphoric acid, diethyl 4-nitrophenylester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethyltio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S-[2--(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoric acid, bis(1-methylethyl) ester
P089	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	Phosphorothioic acid, 0-[4-[(dimethylami- no) sulfonyul] phenyl] O,O-dimethyl ester
P071	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K (CN)
P099	Potassium silver cyanide
P070	Porpanal, 2-methyl-2-(methylthio)-, O-[(methlamino) carbonyl] oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	1,2,3-Propanetriol trinitrate (R)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P008	4-Pyridinamine
P075	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S) and salts
P114	Selenious acid, dithallium (1+) slat
P103	Selenourea
P104	Silver cyanide Ag(CN)

EPA HAZARDOUS WASTE NO.	SUBSTANCE
P105	Sodium azide
P106	Sodium cyanide NA(CN)
P107	Strontium sulfide SrS
P108	Strychnidin-10-one and salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P115	Sulfuric acid, dithallium (1+) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethyl pyrophosphate
P112	etranitromethane (R)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium oxide Tl_2O_3
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thioimidodicarbonic diamide[$(H_2N)C(S)]_2NH$
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl])-
P072	Thiourea, 1-naphthaleneyl-
P093	Thiourea, phenyl-
P185	Tirpate
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V_2O_5
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso-
P001	Warfarin, and salts, when present at concentrations greater than 0.3%
P205	Zinc, bis(dimethylcarbamodithioato-S,S´)-,
P121	Zinc cyanide $Zn(CN)_2$
P122	Zinc phosphide Zn_3P_2, when present at concentrations greater than 10% (R,T)

6. The following commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products (RCRA listed). The primary hazardous properties of these materials have been indicated by the letters T (toxicity), R (reactivity), I (ignitability), and C (corrosivity). Absence of a letter indicates that the compound is only listed for toxicity. These wastes and their corresponding U.S. EPA hazardous waste numbers follow.

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U001	Acetaldehyde (I)
U034	Acetaldehyde, trichloro-
U187	Acetamide, N-(4-ethoxyphenyl)-
U005	Acetamide, N-9H-fluoren-2-yl
U240	Acetic acid, (2-4-dichlorophenoxy)-salts and esters
U112	Acetic acid, ethyl ester (I)
U144	Acetic acid, lead (2+) salt
U214	Acetic acid, thallium (1+) salt
See F027	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	Acetone (I)
U003	Acetonitrile (I,T)
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride (C,R,T)
U007	Acrylamide

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U008	Acrylic acid (I)
U009	Acrylonitrile
U011	Amitrole
U012	Aniline (I,T)
U136	Arsinic acid, dimethyl-
U014	Auramine
U015	Azaserine
U365	H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester
U010	Azirino[2', 3':3,4]pyrrolo [1,2-a] indole-4,7-dione, 6-amino-8-[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(aalpha,8beta, 8aalpha, 8balpha)]-
U280	Barban
U278	Bendiocarb
U364	Bendiocarb phenol
U010	Azirino (2', 3' :3,4)pyrrolo [1,2-] indole-4,7-dione,6-amino-8-[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-
U280	Barban
U278	Bendiocarb
U364	Bendiocarb phenol
U271	Benomyl
U157	Benz[j]aceanthrylene, 1,2-dihydro-3--methyl-
U016	Benz[c]acridine
U017	Benzal chloride
U192	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U018	Benz[a]anthacene
U094	Benz[a]anthracene, 7, 12-dimethyl-
U012	Benzenamine (I,T)

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U014	Benzenamine 4,4'-carbonimiodiylbis [N,N-dimethyl]-
U049	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	Benzenamine, 2-methyl-
U353	Benzenamine, 4-methyl-
U158	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	Benzenamine, 2-methyl-, hydrochloride
U181	Benzenamine, 2-methyl-5-nitro-
U019	Benzene (I,T)
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U035	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	Benzene, chloro-
U221	Benzenediamine, ar-methyl-
U028	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, dimethyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U060	Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro]-
U017	Benzene, (dichloromethyl)-

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U223	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	Benzene, dimethyl- (I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro-(I)
U220	Benzene, methyl-
U105	Benzene, 1-methyl-2,4-dinitro-
U106	Benzene, 2-methyl-1,3-dinitro-
U055	Benzene, (1-methylethyl)- (I)
U169	Benzene, nitro-
U183	Benzene, pentachloro-
U185	Benzene, pentachloronitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U061	Benzene, 1,1'-(2,2,2-trichloroethylidene) bis[4-chloro]-
U247	Benzene, 1,1'-(2,2,2 -trichloroethylidene)bis[4-methoxy]-
U023	Benzene, (trichloromethyl)-
U234	Benzene, 1,3,5-trinitro-
U021	Benzidine
U202	1,2-Benzisothiazol-3-(2H)-one, 1,1-dioxide and salts
U278	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,
U203	1,3-Benzodioxole, 5-(2-propenyl)-
U141	1,3-Benzodioxole, 5-(1-propenyl)-
U367	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U090	1,3-Benzodioxole, 5-propyl-
U064	Benzo[rst]pentaphene

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U248	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less
U022	Benzo[a]pyrene
U197	p-Benzoquinone
U023	Benzotrichloride (C,R,T)
U085	2,2'-Bioxirane
U021	[1,1'-Biphenyl]-4,4'-diamine
U073	[1,1'-Biphenyl]-4,4'-diamine 3.3'-dichloro-
U091	[1,1'-Biphenyl]-4,4'diamine, 3,3'-dimethyl-
U095	[1,1'Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U401	Bis(dimethylthiocarbamoyl) sulfide
U400	Bis(pentamethylene)thiuram tetrasulfid
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U160	2-Butanone, peroxide (R,T)
U053	2-Butenal
U074	2-Butene, 1,4-dichloro- (I,T)
U143	2-Butenoic acid, 2-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*), 7aalpha]]-
U031	n-Butyl alcohol (I)
U392	Butylate
U136	Cacodylic acid
U032	Calcium chromate

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U372	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester
U271	Carbamic acid, [1-[(butylamino) carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
U375	Carbamic acid, butyl-,3-iodo-2-propynyl ester
U280	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U238	Carbamic acid, ethyl ester
U178	Carbamic acid, methylnitroso-, ethyl ester
U373	Carbamic acid, phenyl-, 1-methylethyl ester
U409	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U097	Carbamic chloride, dimethyl-
U379	Carbamodithioic acid, dibutyl, sodium salt
U277	Carbamodithioic acid, diethyl-, 2-chloro-2-propenyl ester
U381	Carbamodithioic acid, diethyl-, sodium salt
U383	Carbamodithioic acid, dimethyl, potassium salt
U382	Carbamodithioic acid, dimethyl-, sodium salt
U376	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid
U378	Carbamodithioic acid, (hydroxymethyl) methyl-, monopotassium salt
U384	Carbamodithioic acid, methyl-, monosodium salt
U377	Carbamodithioic acid, methyl, -monopotassium salt
U389	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
U392	Carbamothioic acid, bis(2-methylpropyl)-,S-ethyl ester

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U391	Carbamothioic acid, butylethyl-, S-propylester
U386	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester
U390	Carbamothioic acid, dipropyl-, S-ethyl ester
U387	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U385	Carbamothioic acid, dipropyl-, S-propyl ester
U114	Carbamodithioic acid, 1,2-ethanediylbis-, salts and esters
U062	Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl) ester
U279	Carbaryl
U372	Carbendazim
U367	Carbofuran phenol
U215	Carbonic acid, dithallium (1+) salt
U033	Carbonic difluoride
U156	Carbonochloridic acid, methyl ester (I,T)
U033	Carbonic difluoride
U211	Carbon tetrachloride
U034	Chloral
U035	Chlormbucil
U036	Chlordane, alpha and gamma isomers
U026	Chlornaphazine
U037	Chlorobenzene
U038	Chlorobenzilate
U039	p-Chloro-m-cresol
U042	2-Chlorothyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U049	4-Chloro-o-toluidine, hydrochloride
U032	Chromic acid H_2CrO_4, calcium salt
U050	Chrysene
U393	Copper, bis (dimethyldithiocarbamodithioato-S,S') -
U051	Creosote
U052	Cresol (Cresylic acid)
U053	Crotonaldehyde
U055	Cumene (I)
U246	Cyanogen bromide (CN)Br
U386	Cycloate
U197	2,5-Cyclohexadiene-1,4-dione
U056	Cyclohexane (I)
U129	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U057	Cyclohexanone (I)
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	Cyclophosphamide
U240	2,4-D, salts and esters
U059	Daunomycin
U366	Dazomet
U060	DDD
U061	DDT
U062	Diallate
U063	Dibenz[a,h]anthracene
U064	Dibenzo[a,i]pyrene
U066	1,2-Dibromo-3-chloropropane
U069	Dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene (I,T)
U075	Dichlorodifluoromethane
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U027	Dichloroisopropyl ether
U024	Dichloromethoxy ethane
U081	1,4-Dichlorophenol
U082	2,6-Dichlorophenol
U084	1,3-Dichloropropene
U085	1,2:3,4-Diepoxybutane (I,T)
U108	1,4-Diethyleneoxide
U028	Diethylhexyl phthalate
U395	Diethylene glycol, dicarbamate
U086	N,N'-Diethylhydrazine
U087	O,O-Diethyl S-methyl dithiophosphate
U088	Diethyl phthalate
U089	Diethylstilbesterol
U090	Dihydrosafrole
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine (I)
U093	p-Dimethylaminoazobenzene
U094	7,12-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine (I)
U111	Di-n-propylnitrosamine
U403	Disulfiram
U390	EPTC
U041	Eipchlorohydrin
U001	Ethanal (I)
U404	Ethanamine, N,N-diethyl-
U174	Ethanamine, N-ehtyl-N-nitroso-
U155	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	Ethane, 1,2-dibromo-
U076	Ethane, 1,1-dichloro-
U077	Ethane, 1,2-dichloro-
U131	Ethane, hexachloro-
U024	Ethane, 1,1'-[methylenebis(oxy)] bis[2-chloro-
U117	Ethane, 1,1'-oxybis-(I)
U025	Ethane, 1,11'-oxybis[2-chloro-
U184	Ethane, pentachloro-
U208	Ethane, 1,1,1,2-tetrachloro-
U209	Ethane, 1,1,2,2-tetrachloro-
U218	Ethanethioamide
U226	Ethane, 1,1,1-trichloro-
U227	Ethane, 1,1,2-trichloro-
U410	Ethanimidothioic acid, N,N´ [thiobis[(methylimino) carbonyloxy]]bis-, dimethyl ester

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U394	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo, methyl ester
U359	Ethanol, 2-ethoxy
U173	Ethanol, 2,2'-(nitrosoimino)bis-
U395	Ethanol, 2-ethoxy
U004	Ethanone, 1-phenyl-
U043	Ethene, chloro-
U042	Ethene, (2-chloroethoxy)-
U078	Ethene, 1,1-dichloro-
U079	Ethene, 1,2-dichloro-, (E)-
U210	Ethene, tetrachloro-
U228	Ethene, trichloro-
U112	Ethyl acetate (I)
U113	Ethyl acrylate (I)
U238	Ethene, trichloro-
U114	Ethylenebisdithiocarbamic acid, salts and esters
U067	Ethylene dibromide
U077	Ethylene dichloride
U359	Ethylene glycol monoethyl ether
U115	Ethylene oxide (I,T)
U116	Ethylene thiourea
U117	Ethyl ether (I)
U076	Ethylidene dichloride
U118	Ethyl methacrylate
U119	Ethyl methanesulfonate
U407	Ethyl ziram
U396	Ferbam
U120	Fluoranthene
U122	Formaldehyde
U123	Formic acid (C,T)
U124	Furan (I)
U125	2-Fruancarboxaldehyde (I)

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U147	2,5-Furandione
U213	Furan, tetrahydro- (I)
U125	Furfural (I)
U124	Furfuran (I)
U206	Glucopyranose, 2-deoxy-2(e-methyl-3-nitrosoureido)-, D-
U206	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-carbonyl] amino]-
U126	Glycidyladehyde
U163	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	Hexachlorobenzene
U128	Hexachlorobutadiene
U130	Hexachlorocyclopentadiene
U131	Hexachloroethane
U132	Hexachlorophene
U243	Hexachloropropene
U133	Hydrazine (R,T)
U086	Hydrazine, 1,2-diethyl-
U098	Hydrazine, 1,1-dimethyl-
U099	Hydrazine, 1,2-dimethyl-
U109	Hydrazine, 1,2-diphenyl-
U134	Hydrofluoric acid (C,T)
U134	Hydrogen fluoride (C,T)
U135	Hydrogen sulfide
U135	Hydrogen sulfide H_2S
U096	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U116	2-Imidazolidinethione
U137	Indeno[1,2,3-cd]pyrene
U375	3-Iodo-2-propynyl n-butylcarbamate
U396	Iron, tris (dimethylcarbamodithioato-S,S')-
U190	1,3-Isobenzofurandione

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U140	Isobytyl alcohol (I,T)
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U146	Lead, bis(acetato-O) tetrahydroxytri-
U145	Lead phosphate
U146	Lead subacetate
U129	Lindane
U163	MNNG
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U384	Metam sodium
U152	Methacrylonitrile (I,T)
U092	Methanamine, N-methyl- (I)
U029	Methane, bromo-
U045	Methane, chloro- (I,T)
U046	Methane, chloro- (I,T)
U068	Methane, dibromo-
U080	Methane, dichloro-
U075	Methane, dichlorodifluoro-
U138	Methane, iodo-
U119	Methanseulfonic acid, ethyl ester
U211	Methane, tetrachloro-
U153	Methanethiol (I,T)
U225	Methane, tribromo-
U044	Methane, trichloro-
U121	Methane, trichlorofluoro-

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U036	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8- octachloro-2,3,3a,4,7,7a-hexahydro-
U154	Methanol (I)
U155	Methapyrilene
U142	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	Methoxychlor
U154	Methyl alcohol (I)
U029	Methyl bromide
U186	1-Methylbutadiene (I)
U045	Methyl chloride (I,T)
U156	Methyl chloride (I,T)
U226	Methyl chloroform
U157	3-Methylcholanthrene
U158	4,4'-Methylenebis(2-chloroaniline)
U068	Methylene bromide
U080	Methylene chloride
U159	Methyl ethyl ketone (MEK) (I,T)
U160	Methyl ethyl ketone peroxide (R,T)
U138	Methyl iodide
U161	Methyl isobutyl ketone (I)
U162	Methyl methacrylate (I,T)
U161	4-Methyl-2-pentanone (I)
U164	Methylthiouracil
U010	Mitomycin C
U365	Molinate
U059	5,12-Naphthacenedione, 8-acetyl-10- [(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl) oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	1-Naphthalenamine
U168	2-Naphthalenamine

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U026	Naphthalenamine, N,N'-bis(2-chloroethy1)-
U165	Naphthalene
U047	Naphthalene, 2-chloro-
U166	1,4-Naphthalenedione
U167	alpha-Naphthylamine
U168	beta-Naphthylamine
U217	Nitric acid, thallium (1+) salt
U169	Nitrobenzene (I,T)
U170	p-Nitrophenol
U171	2-Nitropropane (I, T
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurea
U178	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	N-Nitrosopyrrolidine
U181	5-Nitro-o-toluidine
U193	1,2-Oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl) tetrahydro-,2-oxide
U115	Oxirane (I,T)
U126	Oxiranecarboxyaldehyde
U041	Oxirane, (chloromethyl)-
U182	Paraldehyde
U391	Pebulate
U183	Pentachlorobenzene
U184	Pentachloroethane
U185	Pentachloronitrobenzene (PCNB)
See F027	Pentachlorophenol
U161	Pentanol, 4-methyl-

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U186	1,3-Pentadiene (I)
U187	Phenacetin
U188	Phenol
U048	Phenol, 4-chloro-
U039	Phenol, 4-chloro-3-methyl-
U081	Phenol, 2, 4-dichloro-
U082	Phenol, 2 6-dichloro-
U089	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl) bis-,(E)-
U101	Phenol, 2,4-dimethyl-
U052	Phenol, methyl-
U132	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U411	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	Phenol, 4-nitro-
See F027	Phenol, pentachloro-
See F027	Phenol, 2,3,4,6-tetrachloro
See F027	Phenol, 2,4,5-trichloro-
See F027	Phenol, 2,4,6-trichloro-
U150	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	Phosphoric acid, lead (2+) salt (2:3)
U087	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	Phosphorous sulfide (R)
U190	Phthalic anhydride
U191	2-Picoline
U179	Piperidine, 1-nitroso-
U400	Piperidine, 1,1´-(tetrathiodicarbonothioyl)-bis-
U383	Potassium dimethyldithiocarbamate
U378	Potassium n-hydroxymethyl-n-methyldi-thiocarbamate
U377	Potassium n-methyldithiocarbamate

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U192	Pronamide
U194	1-Propanamine (I,T)
U111	1-Propanamine, N-nitroso-N-propyl-
U110	1-Propanamine, N-propyl- (I)
U066	Propane, 1,2-dibromo-3-chloro-
U083	Propane, 1,2-dichloro-
U149	Propanedinitrile
U171	Propane, 2-nitro- (I,T)
U027	Propane, 2,2'-oxybis[1-chloro-
U193	1,3-Propane sultone
See F027	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	1-Propanol, 2-methyl- (I,T)
U002	2-Propanone (I)
U007	2-Propenamide
U084	1-Propene, 1,3-dichloro
U243	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	2-Propenenitrile
U152	2-Propenenitrile, 2-methyl- (I,T)
U008	2-Propenioc acid (I)
U113	2-Propenoic acid, ethyl ester (I)
U118	2-Propenoic acid, 2-methyl-, ethyl ester
U162	2-Propenioc acid, 2-methyl-, methyl ester (I,T)
U194	n-Propylamine (I,T)
U373	Propham
U411	Propoxur
U387	Prosulfocarb
U083	Propylene dichloride
U148	3,6-Pyridazinedione, 1,2-dihydro-
U196	Pyridine

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U191	Pyridine, 2-methyl-
U237	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	4-(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	Pyrrolidine, 1-nitroso-
U200	Reserpine
U201	Resorcinol
U202	Saccharin and salts
U203	Safrole
U204	Selenious acid
U204	Selenium dioxide
U205	Selenium sulfide
U205	Selenium sulfide SeS_2 (R,T)
U376	Selenium, tetrakis (dimethyldithiocarbamate)
U015	L-Serine, diazoacetate (ester)
See F027	Silvex
U379	Sodium dibutyldithiocarbamate
U381	Sodium diethyldithiocarbamate
U382	Sodium dimethyldithiocarbamate
U206	Streptozotocin
U103	Sulfuric acid, dimethyl ester
U189	Sulfur phosphide (R)
See F027	Silvex (2,4,5-TP)
U402	Tetrabutylthiuram disulfide
U207	1,2,4,5-Tetrachlorobenzene
U208	1,1,1,2-Tetrachloroethane
U209	1,1,2,2-Tetrachloroethane
U210	Tetrachloroethylene
See F027	2,3,4,6-Tetrachlorophenol
U213	Tetrahydrofuran (I)
U401	Tetramethylthiuram monosulfide
U214	Thallium (I) acetate

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U215	Thallium (I) carbonate
U216	Thallium (I) chloride
U216	Thallium chloride TICI
U217	Thallium (I) nitrate
U366	2H-1,3,5-Thiadiazine- 2-thione, tetrahydro-3,5-dimethyl-
U218	Thioacetamide
U410	Thiodicarb
U153	Thiomethanol (I,T)
U244	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-
U402	Thioperoxydicarbonic diamide, tetrabutyl
U403	Thioperoxydicarbonic diamide, tetraethyl
U409	Thiophanate-methyl
U219	Thiourea
U244	Thiram
U220	Toluene (I,T)
U221	Toluenediamine
U223	Toluene diisocyanate (R,T)
U328	o-Toluidin
U353	p-Toluidine
U222	o-Toluidine hydrochloride
U389	Triallate
U011	1H-1,2,4-Trizaol-3-amine
U227	1,1,2-Trichloroethane
U228	Trichloroethylene
U121	Trichloromonofluoromethane
See F027	2, 4,5-Trichlorophenol
See F027	2,4,6-Trichlorophenol
U404	Triethylamine
U234	1,3,5-Trinitrobenzene (R,T)
U182	1,3,5-Trioxane, 2,4,6-trimethyl-

EPA HAZARDOUS WASTE NO.	SUBSTANCE
U235	Tris (2,3-dibromopropyl) phosphate
U236	Trypan blue
U237	Uracil mustard
U176	Urea, N-ethyl-N-nitroso-
U177	Urea, N-methyl-N-nitroso-
U043	Vinyl chloride
U248	Warfarin, and salts, when present at concentrations of 0.3% or less
U239	Xylene (I)
U200	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl) oxy]-,methyl ester, (3beta,16beta,17alpha,18beta, 20alpha)-
U407	Zinc, bis (diethylcarbamodithioato-S,S´)-
U249	Zinc phosphide Zn_3P_2, when present at concentrations of 10% or less

G. COMMON NAMES OF WASTES

CALIFORNIA PRESUMPTIVE WASTES, NON-RCRA [22 CCR, CHAPTER 11, APPENDIX X]

This group of wastes sets forth a list of common names of wastes that are presumed to be hazardous wastes in California unless it is determined that the waste is not a hazardous waste pursuant to the procedures set forth in 22 CCR §66262.11. The hazardous characteristics, which serve as a basis for listing the common names of wastes, are indicated in the list as follows:

(X) TOXIC, (C) CORROSIVE, (I) IGNITABLE, (R) REACTIVE	
Acetylene sludge (C)	Lime wastewater (C)
Acid and water (C)	Liquid cement (I)
Acid sludge (C)	Mine tailings (X,R)
AFU Floc (X)	Obsolete explosives (R)

(X) TOXIC, (C) CORROSIVE, (I) IGNITABLE, (R) REACTIVE	
Alkaline caustic liquids (C)	Oil and water (X)
Alkaline cleaner (C)	Oil ash (X,C)
Alkaline corrosive battery fluid (C)	Paint or varnish remover or stripper
Alkaline corrosive liquids (C)	Paint thinner (X,I)
Asbestos waste (X)	Paint waste or slops (X,I)
Ashes (X,C)	Pickling liquor (C)
Baghouse wastes (X)	Pigments (X)
Battery acid (C)	Plating waste (X,C)
Beryllium waste (X)	Printing Ink (X)
Bilge water (X)	Retrograde explosives (R)
Boiler cleaning waste (X,C)	Sludge acid (C)
Bunker oil (X,I)	Soda ash (C)
Catalyst (X,I,C)	Solvents (I)
Caustic sludge (C)	Spent acid (C)
Caustic wastewater (C)	Spent caustic (C)
Cleaning solvents (I)	Spent or waste cyanide solutions (X,C)
Corrosion inhibitor (X,C)	Spent mixed acid (C)
Data-processing fluid (I)	Spent plating solution (X,C)
Drilling fluids (X,C)	Spent sulfuric acid (C)
Drilling mud (X)	Stripping solution (X,I)
Dyes (X)	Sulfonation oil (I)
Etching acid liquid or solvent (C,I)	Tank bottom sediment (X)
Fly ash (X,C)	Tanning sludges (X)
Fuel waste (X,I)	Toxic chemical toilet wastes (X)
Insecticides (X)	Unrinsed pesticide containers (X)
Laboratory waste (X,C,I,R)	Unwanted or waste pesticides - an unusable portion of active ingredient or undiluted formulation (X)
Lime and sulfur sludge (C)	Waste epoxides (X,I)
Lime and water (C)	Waste or slop oil (X)
Lime sludge (C)	Weed killer (X)

NOTE: 23 specific substances, many of them falling into one or more of the above categories, are no longer defined as hazardous waste when hazardous due solely to toxicity. These include sodium chloride (salt), sodium carbonate (soda ash), and ammonium bromide (corrosion inhibitor). Refer to subsection III-M, Exemptions for Specified Substances, for the full list.

H. LIST OF CHEMICALS THAT CREATE A HAZARDOUS WASTE

CALIFORNIA PRESUMPTIVE WASTES, NON-RCRA [22 CCR, CHAPTER 11, APPENDIX X]

The following list of chemicals provides an alphabetical index of those chemicals that, if part of a waste, create a hazardous waste in California. Those constituents listed with an asterisk indicate wastes that are presumed to be extremely hazardous wastes in California by DTSC.

A chemical denoted with an asterisk (*) is presumed to be an extremely hazardous waste unless it does not exhibit any of the criteria set forth in 22 CCR §66261.110 and §66261.113. Trademark chemical names are indicated by all capital letters. Substances deleted by amended HSC §25141.5 are noted.

The Hazardous Characteristic Is Denoted By: (X) Toxic, (C) Corrosive, (I) Ignitable, (R) Reactive

1. Acetaldehyde (X,I)
2. Acetic acid (X,C,I)
3. Acetone, Propanone (I)
4. Acetone cyanohydrin (X)
5. Acetonitrile (X,I)
6. *2-Acetylaminofluorene, 2-AAF(X)
7. Acetyl benzoyl peroxide (X,I,R)
8. *Acetyl chloride (X,C,R)
9. Acetyl peroxide (X,I,R)
10. Acridine (X)
11. *Acrolein, Aqualin (X,I)
12. *Acrylonitrile (X,I)
13. *Adiponitrile (X)
14. *Aldrin: 1,2,3,4,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo-exodimethanonaphthalene (X)
15. *Alkyl aluminum chloride (C,I,R)
16. *Alkyl aluminum compounds (C,I,R)
17. Allyl alcohol, 2-Propen-1-ol (X,I)
18. Allyl bromide, 3-Bromopropene (X,I)
19. Allyl chloride, 3-Chloropropene (X,I)
20. Allyl chlorocarbonate, Allyl chloroformate (X,I)
21. *Allyl trichlorosilane (X,C,I,R)
22. Aluminum (powder) (I)
23. Aluminum chloride (X,C) [deleted]
24. *Aluminum chloride (anhydrous) (X,C,R)
25. Aluminum fluoride (X,C)
26. Aluminum nitrate (X,I)
27. *Aluminum phosphide, PHOSTOXIN (X,I,R)
28. *4-Aminodiphenyl, 4-ADP (X)
29. *2-Aminopyridine (X)
30. *Ammonium arsenate (X)
31. *Ammonium bifluoride (X,C)
32. Ammonium chromate (X,I)
33. Ammonium dichromate, Ammonium bichromate (X,C,I)
34. Ammonium fluoride (X,C)
35. Ammonium hydroxide (X,C)
36. Ammonium molybdate (X)
37. Ammonium nitrate (I,R)
38. Ammonium perchlorate (I,R)
39. Ammonium permanganate (X,I,R)
40. Ammonium persulfate (I,R)
41. Ammonium picrate (I,R)

42. Ammonium sulfide (X,C,I,R)
43. n-Amyl acetate, 1-Acetoxypentane (and isomers) (X,I)
44. n-Amylamine, 1-Aminopentane (and isomers) (X,I)
45. n-Amyl chloride, 1-Chloropentane (and isomers) (X,I)
46. n-Amylene, 1-Pentene (and isomers) (X,I)
47. n-Amyl mercaptan, 1-Pentanethiol (and isomers) (X,I)
48. n-Amyl nitrate, n-Pentyl nitrite (and isomers) (X,I)
49. *Amyl trichlorosilane (and isomers) (X,C,R)
50. Aniline, Aminobenzene (X)
51. Anisoyl chloride (X,C)
52. Anthracene (X)
53. Antimony (X)
54. Antimony compounds (X)
55. *Antimony pentachloride (X,C,R)
56. *Antimony pentafluoride (X,C,R)
57. Antimony pentasulfide (X,I)
58. Antimony potassium tartrate (X)
59. Antimony sulfate, Antimony trisulfate (X,I)
60. Antimony trichloride, Antimony chloride (X,C)
61. Antimony trifluoride, Antimony fluoride (X,C)
62. Antimony trioxide, Antimony oxide (X)
63. Antimony trisulfide, Antimony sulfide (X,I,R)
64. *Arsenic (X)
65. *Arsenic acid and salts (X)
66. *Arsenic compounds (X)
67. *Arsenic pentaselenide (X)
68. *Arsenic Pentoxide, Arsenic oxide (X)
69. *Arsenic sulfide, Arsenic disulfide (X)
70. *Arsenic tribomide, Arsenic bromide (X)
71. *Arsenic trichloride, Arsenic chloride (X)
72. *Arsenic triiodide, Arsenic iodide (X)
73. *Arsenic trioxide, Arsenious oxide (X)
74. *Arsenious acid and salts (X)
75. *Arsines (X)
76. Asbestos (including chrysotile, amosite, crocidolite, tremolite, anthophilite, and actinolite) (X)
77. *AZODRIN, 3-Hydroxy-N-cis-crotonamide (X)
78. Barium (X,I)
79. Barium azide (I,R)
80. Barium bromide (X)
81. Barium carbonate (X)
82. Barium chlorate (X,C,I,R)
83. Barium chloride (X)
84. Barium chromate (X)
85. Barium citrate (X)
86. Barium compounds (soluble) (X)
87. *Barium cyanide (X)
88. Barium fluoride (X)
89. Barium fluosilicate (X)
90. Barium hydroxide (X)
91. Barium iodide (X)
92. Barium manganate (X)
93. Barium nitrate (X,I)
94. Barium oxide, Barium monoxide (X)
95. Barium perchlorate (X,I,R)
96. Barium permanganate (X,I,R)
97. Barium peroxide (X,I,R)
98. Barium phosphate (X)
99. Barium stearate (X)
100. Barium sulfide (X)

101. Barium sulfite (X)
102. Benzene (X,I)
103. *Benzene hexachloride, BHC; 1,2,3,4,5,6-Hexachloro-cyclohexane (X)
104. *Benzenephosphorous dichloride (I,R)
105. Benzenesulfonic acid (X)
106. *Benzidine and salts (X)
107. *Benzotrifluoride, Trifluoromethylbenzene (X,I)
108. *Benzoyl chloride (X,C,R)
109. Benzoyl peroxide, Dibenzoyl peroxide (X,I,R)
110. Benzyl bromide, alpha-Bromotoluene (X,C)
111. Benzyl chloride, alpha-Chlorotoluene (X)
112. *Benzyl chlorocarbonate, Benzyl chloroformate (X,C,R)
113. *Beryllium (X,I)
114. *Beryllium chloride (X)
115. *Beryllium compounds (X)
116. *Beryllium copper (X)
117. *Beryllium fluoride (X)
118. *Beryllium hydride (X,C,I,R)
119. *Beryllium hydroxide (X)
120. *Beryllium oxide (X)
121. *BIDRIN, Dicotophos, 3-(Dimethylamino)-1-methyl-3-oxo-1-propenyldimethyl phosphate (X)
122. *bis (Chloromethyl) ether, Dichloromethylether, BCME (X)
123. Bismuth (X,I)
124. *bis (Methylmercuric) sulfate, CEREWET, Ceresan liquid (X)
125. Bismuth chromate (X)
126. *BOMYL, Dimethyl 3-hydroxyglutaconate dimethyl phosphate (X)
127. *Boranes (X,I,R)
128. *Bordeaux arsenites (X)
129. *Boron trichloride, Trichloroborane (X,C,R)
130. *Boron trifluoride (X,C,R)
131. Bromic acid (X)
132. *Bromine (X,C,I)
133. *Bromine pentafluoride (X,C,I,R)
134. *Bromine trifluoride (X,C,I,R)
135. *Brucine, Dimethoxystrychnine (X)
136. 1,2,4-Butanetriol trinitrate (R)
137. n-Butyl acetate, 1-Acetoxybutane (and isomers) (X)
138. n-Butyl alcohol, 1-Butanol (and isomers) (X)
139. n-Butyl amine, 1-Aminobutane (and isomers) (X)
140. n-Butyl formate (and isomers) (X)
141. tert-Butyl hydroperoxide (and isomers) (X,I)
142. *n-Butyllithium (and isomers) (X,C,I,R)
143. n-Butyl mercaptan, 1-Butanethiol (and isomers) (X,I)
144. tert-Butyl peroxyacetate, tert-Butyl peracetate (I,R)
145. tert-Butyl peroxybenzoate, tert-Butyl perbenzoate (I,R)
146. tert-Butyl peroxypivalate (I,R)
147. *n-Butyltrichlorosilane (C,I,R)
148. para-tert-Butyl toluene (X)
149. n-Butyraldehyde, n-Butanal (and isomers) (X,I)
150. *Cacodylic acid, Dimethylarsinic acid (X)
151. *Cadmium (powder) (X,I)
152. Cadmium chloride (X)
153. *Cadmium compounds (X)
154. *Cadmium cyanide (X)
155. Cadmium fluoride (X)
156. Cadmium nitrate (X,I,R)
157. Cadmium oxide (X)

158. Cadmium phosphate (X)
159. Cadmium sulfate (X)
160. *Calcium (I,R)
161. *Calcium arsenate, PENSAL (X)
162. *Calcium arsenite (X)
163. *Calcium carbide (C,I,R)
164. Calcium chlorate (I,R)
165. Calcium chlorite (I)
166. Calcium fluoride (X) [deleted]
167. *Calcium hydride (C,I,R)
168. Calcium hydroxide, Hydrated lime (C)
169. *Calcium hypochlorite, Calcium oxychloride (dry) (X,C,I,R)
170. Calcium molybdate (X)
171. Calcium nitrate, Lime nitrate, Nitrocalcite (I,R)
172. Calcium oxide, Lime (C)
173. Calcium permanganate (X,I)
174. Calcium peroxide, Calcium dioxide (C,I)
175. *Calcium phosphide (X,I,R)
176. Calcium resinate (I)
177. Caprylyl peroxide, Octyl peroxide (I)
178. *Carbanolate, BANOL, 2-Chloro-4,5-dimethylphenyl methylcarbamate (X)
179. Carbon disulfide, Carbon bisulfide (X,I)
180. Carbon tetrachloride, Tetrachloromethane (X)
181. *Carbophenothion, TRITHION, S[[(4-Chlorophenyl) thio]methyl] 0,0-diethyl phosphorodithioate (X)
182. Chloral hydrate, Trichloroacetaidehyde (hydrated) (X)
183. *Chlordane; 1,2,4,5,6,7,8.8-Octachloro-4,7-methano-3a,4,7,7a-tetra- hydro- indane (X)
184. *Chlorfenvinphos, Compound 4072.2-Chloro-1-(2,4-dichlorophenyl) vinyl diethyl phosphate (X)
185. *Chlorine (X,C,I,R)
186. *Chlorine dioxide (X,C,I,R)
187. *Chlorine pentafluoride (X,C,I,R)
188. *Chlorine trifluoride (X,C,I,R)
189. *Chloroacetaldehyde (X,C)
190. *alpha-Chloroacetophenone, Phenyl chloromethyl ketone (X)
191. *Chloroacetyl chloride (X,C,R)
192. Chlorobenzene (X,I)
193. para-Chlorobenzoyl peroxide (I,R)
194. *ortho-Chlorobenzylidene malonitrile, OCMB (X)
195. Chloroform, Trichloromethane (X)
196. *Chloropicrin, Chlorpicrin, Trichloronitromethane (X)
197. *Chlorosulfonic acid (X,C,I,R)
198. Chloro-ortho-toluidine, 2-Amino-4-chlorotoluene (X)
199. Chromic acid, Chromium trioxide, Chromic anhydride (X,C,I)
200. Chromic chloride, Chromium trichloride (X)
201. Chromic fluoride, Chromium trifluoride (X)
202. Chromic hydroxide, Chromium hydroxide (X)
203. Chromic oxide, Chromium oxide (X)
204. Chromic sulfate, Chromium sulfate (X)
205. Chromium compounds (X,C,I)
206. *Chromyl chloride, Chlorochromic anhydride (X,C,I,R)
207. Cobalt (powder) (X,I)
208. Cobalt compounds (X)
209. Cobaltous bromide, Cobalt bromide (X)
210. Cobaltous chloride, Cobalt chloride (X)
211. Cobaltous nitrate, Cobalt nitrate (X,I)
212. Cobaltous resinate, Cobalt resinate (X,I)
213. Cobaltous sulfate, Cobalt sulfate (X)

214. Cocculus, Fishberry, Picrotoxin (X)
215. [No chemical listed]
216. *Copper acetoarsenite, Paris green (X)
217. Copper acetylide (I,R)
218. *Copper arsenate, Cupric arsenate (X)
219. *Copper arsenite, Cupric arsenite (X)
220. Copper chloride, Cupric chloride (X)
221. Copper chlorotetrazole (I,R)
222. Copper compounds (X)
223. *Copper cyanide, Cupric cyanide (X)
224. Copper nitrate, Cupric nitrate (X,I,R)
225. Copper sulfate, Cupric sulfate, Blue vitriol (X)
226. *Coroxon; ortho,ortho-Diethyl-ortho-(3-chloro-4-methylcoumarin-7-vi) phosphate (X)
227. *Coumafuryl, FUMARIN, 3-[1-(2-Furanyl)-3-oxobutyl] 1-4-hydroxy-2H-1-benzopyran-2-one (X)
228. *Coumatetralyl, BAYER 25634, RACUMIN 57, 4-Hydroxy-3-(1,2,3,4-tetrahydro-1-naphthalenyl)-2H-1-benzopyran-2-one (X)
229. *Crimidine, CASTRIX, 2-Chloro-4-dimethylamino-6-methyl-pyrimidine (X)
230. *Crotonaldehyde, 2-Butenal (X)
231. Cumene, Isopropyl benzene (X,I)
232. Cumene hydroperoxide; alpha, alpha-Dimethylbenzyl hydro-peroxide (X,I)
233. Cupriethylene diamine (X)
234. *Cyanide salts (X)
235. Cyanoacetic acid, Malonic nitrile (X)
236. *Cyanogen (X,I,R)
237. Cyanogen bromide, Bromine cyanide (X)
238. Cyanuric triazide (I,R)
239. Cycloheptane (X,I)
240. Cyclohexane (X,I)
241. Cyclohexanone peroxide (I)
242. *Cyclohexenyltrichlorosilane (X,C,R)
243. *Cycloheximide, ACTIDIONE (X)
244. *Cyclohexyltrichlorosilane (X,C,R)
245. Cyclopentane (X,I)
246. Cyclopentanol (I)
247. Cyclopentene (X,I)
248. DDT; 1,1,1-Trichloro-2,2-bis(chlorophenyl) ethane (X)
249. *DDVP, Dichlorvos, VAPONA, Dimethyl dichlorovinyl phosphate (X)
250. *Decaborane (X,I,R)
251. DECALIN, Decahydronaphthalene (X)
252. *Demeton, SYSTOX (X)
253. *Demeton-S-methyl sufone, METAISOSYSTOX-SULFON,S-[2-(ethyl-sulfonyl) ethyl] 0,0-dimethyl phosphorothioate (X)
254. Diazodinitrophenol, DDNP, 2-Diazo-4,6-dinitrobenzene-1-oxide (I,R)
255. *Diborane, Diboron hexahydride (I,R)
256. *1,2-Dibromo-3-chloropropane, DBCP, Fumazone, nemagon (X)
257. n-Dibutyl ether, Butyl ether (and isomers) (X,I)
258. Dichlorobenzene (ortho, meta, para) (X)
259. *3,3-Dichlorobenzidine and salts, DCB (X)
260. 1,2-Dichloroethylene; 1,2-Dichloroethene (X,I)
261. Dichloroethyl ether, Dichloroether (X,I)
262. Dichloroisocyanuric acid, Dichloro-S-triazine-2,4,6-tri-one (X,I)
263. Dichloromethane, Methylene chloride (X)
264. *2,4-Dichlorophenoxyacetic acid; 2,4-D (X)
265. 1,2-Dichloropropane, Propylene dichloride (X,I)
266. 1,3-Dichloropropylene; 1,3-Dichloropropene (X,I)

267. Dicumyl peroxide (X,I)
268. *Dieldrin; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,exo-5,8-dimethanonaphthalene
269. *Diethylaluminum chloride, Aluminum diethyl monochloride, DEAC (I,R)
270. Diethylamine (X,I)
271. *Diethyl chlorovinyl phosphate, Compound 1836 (X)
272. *Diethyldichlorosilane (X,C,I,R)
273. Diethylene glycol dinitrate (I,R)
274. Diethylene triamine (X)
275. O,O-Diethyl-S-(isopropylthiomethyl) phosphorodithioate (X)
276. *Diethylzinc, Zinc ethyl (C,I,R)
277. *Difluorophosphoric acid (X,C,R)
278. *Diglycidyl ether, bis(2,3-Epoxypropyl) ether (X)
279. Diisopropylbenzene hydroperoxide (X,I)
280. Diisopropyl peroxydicarbonate, Isopropyl percarbonate (X,C,I,R)
281. *Dimefox, Hanane, Pextox 14, Tetramethylphosphorodiamidic fluoride (X)
282. Dimethylamine, DMA (X,I)
283. *Dimethylaminoazobenzene, Methyl yellow (X)
284. *Dimethyldichlorosilane, Dichlorodimethylsilane (X,C,I,R)
285. 2,5-Dimethylhexane-2,5-Dihydroperoxide (I)
286. *1,1-Dimethylhydrazine, UDMH (X,I)
287. *Dimethyl sulfate, Methyl sulfate (X)
288. *Dimethyl sulfide, Methyl sulfide (X,I,R)
289. 2,4-Dinitroaniline (X)
290. *Dinitrobenzene (ortho, meta, para) (I,R)
291. Dinitrochlorobenzene, 1-Chloro-2,4-dinitrobenzene (I,R)
292. *4,6-Dinitro-ortho-cresol, DNPC, SINOX, E
293. *Dinitrophenol (2,3-;2,4-;2,6-isomers) (I,R)
294. 2,4-Dinitrophenylhydrazine (X,I,R)
295. Dinitrotoluene (2,4-;3,4-;3,5-isomers) (X,I,R)
296. *DINOSEB; 2,4-Dinitro-6-sec-butylphenol (X)
297. 1,4-Dioxane; 1,4-Diethylene dioxide (X,I,R)
298. *Dioxathion, DELNAV; S,S-1,4-dioxane-2,3-diyl bis (O,O-diethyl phosphorodithioate) (X)
299. *Dipentaerythritol hexanitrate (R)
300. *Diphenyl, Biphenyl, Phenylbenzene (X)
301. Diphenylamine, DPA,N-Phenylaniline (X)
302. *Diphenylamine chloroarsine, Phenarsazine chloride (X)
303. *Diphenyldichlorosilane (X,C,R)
304. Dipicrylamine, Hexanitrodiphenyl amine (I,R)
305. Dipropyl ether (X,I)
306. Disulfoton, DI-SYSTON; O-O-Diethyl S-[2-(ethylthio) ethyl] phosphorodithioate (X)
307. *Dodecyltrichlorosilane (X,C,R)
308. *DOWCO-139, ZECTRAM, Mexacarbate, 4-(Dimethylamino)-3,5-dimethylphenylmethylcarbamate (X)
309. [No chemical listed]
310. *DYFONATE, Fonofos, O-Ethyl-S-phenylethyl phosphonodithioate (X)
311. *Endosulfan, THIODAN; 6,7,8,9,10,10-Hexachlor-1,5,5a,6,9,9a-hexa-hydro-6,9-methano-2,4,3-benzo-dioxathiepin-3-oxide (X)
312. *Endothal, 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid (X)
313. *Endothion, EXOTHION, S-[(5-Methoxy-4-oxo-4H-pyran-2-yl)-methyl] O,O-dimethyl phosphorothioate (X)
314. *Endrin; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5,8-dimethanonaph-thalene (X)
315. Epichlorohydrin, Chloropropylene oxide (X,I)

316. *EPN; O-Ethyl O-para-nitrophenyl phenylphosphonothioate (X)
317. *Ethion, NIALATE; O,O,O', O'-Tetraethyl-S,S-methylenediphos-phorodithioate (X)
318. Ethyl acetate (X,I)
319. Ethyl alcohol, Ethanol (X,I)
320. Ethylamine, Aminoethane (X,I)
321. Ethylbenzene, Phenylethane (X,I)
322. Ethyl butyrate, Ethyl butanoate (I)
323. Ethyl chloride, Chloroethane (X,I)
324. *Ethyl chloroformate, Ethyl chlorocarbonate (X,C,I,R)
325. *Ethyldichloroarsine, Dichloroethylarsine (I,R)
326. *Ethyldichlorosilane (X,C,I,R)
327. *Ethylene cyanohydrin, beta-Hydroxypropionitrile (I,R)
328. Ethylene diamine (X)
329. Ethylene dibromide; 1,2-Dibromoethane (X)
330. Ethylene dichloride; 1,2 Dichloroethane (X,I)
331. *Ethyleneimine, Aziridine, EI (X,I,R)
332. Ethylene oxide, Epoxyethane (X,I,R)
333. Ethyl ether, Diethyl ether (I,R)
334. Ethyl formate (X,I)
335. *Ethyl mercaptan, Ethanethiol (X,I,R)
336. Ethyl nitrate (I,R)
337. Ethyl nitrite (I,R)
338. *Ethylphenyldichlorosilane (X,C,R)
339. Ethyl propionate (I)
340. *Ethyltrichlorosilane (I,R)
341. *Fensulfothion, BAYER 25141, DASANIT, O,O-Diethyl-0-[4-(methyl-sulfinyl)phenyl] phosphorothioate (X)
342. *Ferric arsenate (X)
343. Ferric chloride, Iron (III) chloride (X,C)
344. *Ferrous arsenate, Iron arsenate (X)
345. *Fluoboric acid, Fluoroboric acid (X,C)
346. Fluoride salts (X)
347. *Fluorine (X,C,R)
348. *Fluoroacetanilide, AFL 1082 (X)
349. *Fluoroacetic acid and salts, Compound 1080 (X)
350. *Fluorosulfonic acid, Fluosulfonic acid (X,C,R)
351. Formaldehyde, Methanal (X,I)
352. Formic acid, Methanoic acid (X,C)
353. Fulmite of mercury, Mercuric cyanate (I,R)
354. *FURADAN, NIA 10,242, Carbofuran; 2,3-Dihydro-2,2-dimethyl-7-benzofuranylmethylcarbamate (X)
355. Furan, Furfuran (X,I,R)
356. Gasoline (I)
357. *GB, O-Isopropyl methyl phosphoryl fluoride (X)
358. Glutaraldehyde (X)
359. Glycerolmonolactate trinitrate (R)
360. Glycol dinitrate, Ethylene glycol dinitrate (R)
361. Gold fulminate, Gold cyanate (R)
362. Guanidine nitrate (I,R)
363. Guanyl nitrosaminoguanylidene hydrazine (R)
364. *Guthion; O-O-Dimethyl-S-4-oxo-1,2,3 benzotriazin-3(4H)-ylmethyl phosphorodithioate (X)
365. Hafnium (X,I,R)
366. *Heptachlor; 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetra-hydro-4,7-methanoindene (X)
367. n-Heptane (and isomers) (X,I)
368. 1-Heptene (and isomers) (X,I)
369. *Hexadecyltrichlorosilane (X,C,R)
370. Hexaethyl tetraphosphate, HETP (X)
371. Hexafluorophosphoric acid (X,C)

372. Hexamethylenediamine; 1,6-Diaminohexane (X)
373. n-Hexane (and isomers) (X,I)
374. 1-Hexene (and isomers) (X,I)
375. n-Hexylamine, 1-Aminohexane (and isomers) (X,I)
376. *Hexyltrichlorosilane (X,C,R)
377. *Hydrazine, Diamine (X,I)
378. Hydrazine azide (I,R)
379. Hydrazoic acid, Hydrogen azide (I,R)
380. *Hydriodic acid, Hydrogen iodide (X,C,R)
381. *Hydrobromic acid, Hydrogen bromide (X,C,R)
382. *Hydrochloric acid, Hydrogen chloride, Muriatic acid (X,C,R)
383. *Hydrocyanic acid, Hydrogen cyanide (X,I,R)
384. *Hydrofluoric acid, Hydrogen fluoride (X,C,R)
385. Hydrofluosilicic acid, Fluosilicic acid (X,C)
386. Hydrogen peroxide (X,C,I,R)
387. *Hydrogen selenide (X,I)
388. *Hydrogen sulfide (X,I)
389. *Hypochlorite compounds (X,C,I,R)
390. Indium (X)
391. Indium compounds (X)
392. Iodine monochloride (X,C,R)
393. Isooctane; 2,2,4-Trimethylpentane (X,I)
394. Isooctene (mixture of isomers) (I)
395. Isopentane, 2-Methylbutane (I)
396. Isoprene, 2-Methyl-1,3-butadiene (X,I,R)
397. Isopropanol, Isopropyl alcohol, 2-Propanol (X,I)
398. Isopropyl acetate (X,I)
399. [No chemical listed]
400. Isopropylamine, 2-Aminopropane (X,I)
401. Isopropyl chloride, 2-Chloropropane (I)
402. Isopropyl ether, Diisopropyl ether (I,R)
403. Isopropyl mercaptan, 2-Propanethiol (X,I)
404. [No chemical listed]
405. *meta-Isopropylphenyl-N-methylcarbamate, Ac 5,727 (X)
406. *Kepone; 1,1a,3,3a,4,5,,5a,5b,6-Decachloro-octahydro-1,2,4-metheno-2H-cyclobuta (cd) pentalen-2-one, Chlorecone (X)
407. Lauroyl peroxide, Di-n-dodecyl peroxide (X,C,I,R)
408. Lead compounds (X)
409. Lead acetate (X)
410. Lead arsenate, Lead orthoarsenate (X)
411. Lead arsenite (X)
412. Lead azide (I,R)
413. Lead carbonate (X)
414. Lead chlorite (I,R)
415. Lead cyanide (X)
416. Lead 2,4-dinitroresorcinate (I,R)
417. Lead mononitroresorcinate (I,R)
418. Lead nitrate (X,I)
419. Lead oxide (X)
420. Lead styphnate, Lead trinitroresorcinate (I,R)
421. *Lewisite, beta-Chlorovinyldichloroarsine (X)
422. *Lithium (C,I,R)
423. *Lithium aluminum hydride, LAH (C,I,R)
424. *Lithium amide (C,I,R)
425. *Lithium ferrosilicon (I,R)
426. *Lithium hydride (C,I,R)
427. *Lithium hypochlorite (X,C,I,R)
428. Lithium peroxide (C,I,R)
429. Lithium silicon (I,R)
430. *London purple, Mixture of arsenic trioxide, aniline, lime, and ferrous oxide (X)
431. *Magnesium (I,R)

432. *Magnesium arsenate (X)
433. *Magnesium arsenite (X)
434. Magnesium chlorate (I,R)
435. Magnesium nitrate (I,R)
436. Magnesium perchlorate (X,I,R)
437. Magnesium peroxide, Magnesium dioxide (I)
438. *Maleic anhydride (X)
439. Manganese (powder) (I)
440. Manganese acetate (X)
441. *Manganese arsenate, Manganous arsenate (X)
442. Manganese bromide, Manganous bromide (X)
443. Manganese chloride, Manganous chloride (X)
444. Manganese methylcyclopentadienyl tricarbonyl (X)
445. Manganese nitrate, Manganous nitrate (X,I)
446. Mannitol hexanitrate, Nitromannite (R)
447. *MECARBAM; O,O-Diethyl S-(N-ethoxycarbonyl N-methylcarba-moyl-methyl) phosphorodithioate (X)
448. *Medinoterb acetate, 2-tert-Butyl-5-methyl-4,6-dinitro-phenyl acetate (X)
449. para-Menthane hydroperoxide, Paramenthane hydroperoxide (I)
450. Mercuric acetate, Mercury acetate (X)
451. Mercuric ammonium chloride, Mercury ammonium chloride (X)
452. Mercuric benzoate, Mercury benzoate (X)
453. Mercuric bromide, Mercury bromide (X)
454. *Mercuric chloride, Mercury chloride (X)
455. *Mercuric cyanide, Mercury cyanide (X)
456. Mercuric iodide, Mercury iodide (X)
457. Mercuric nitrate, Mercury nitrate (X,I)
458. Mercuric oleate, Mercury oleate (X)
459. Mercuric oxide (red and yellow) (X,I)
460. Mercuric oxycyanide (I,R)
461. Mercuric-potassium iodide, Mayer's reagent (X)
462. Mercuric salicylate, Salicylated mercury (X)
463. Mercuric subsulfate, Mercuric dioxysulfate (X)
464. Mercuric sulfate, Mercury sulfate (X)
465. Mercuric thiocyanide, Mercury thiocyanate (X)
466. Mercurol, Mercury nucleate (X)
467. Mercurous bromide (X)
468. Mercurous gluconate (X)
469. Mercurous iodide (X)
470. Mercurous nitrate (I,R)
471. Mercurous oxide (X)
472. Mercurous sulfate, Mercury bisulfate (X)
473. [No chemical listed]
474. *Mercury (X)
475. *Mercury compounds (X)
476. Metal carbonyls (X)
477. *Metal hydrides (I,R)
478. Metal powders (X,I)
479. *Methomyl, LANNATE, S-Methyl-N-([methyl-carbamoyl] oxy) thioacetimidate (X)
480. *Methoxychlor; 1,1,1-Trichloro-2, -bis(p-methoxyphenyl) ethane, CHEMFLORM, MARLATE (X)
481. *Methoxyethylmercuric chloride, AGALLOL, ARETAN (X)
482. Methyl acetate (X,I)
483. Methyl acetone (mixture of acetone, methyl acetate, and methyl alcohol) (X,I)
484. Methyl alcohol, Methanol (X,I)
485. *Methylaluminum sesquibromide (I,R)
486. *Methylaluminum sesquichloride (I,R)
487. Methylamine, Aminomethane (X,I)
488. n-Methylaniline (X)

489. *Methyl bromide, Bromomethane (X)
490. 2-Methyl-1-butene (I)
491. 3-Methyl-1-butene (I)
492. Methyl butyl ether (and isomers) (X,I)
493. Methyl butyrate (and isomers) (X,I)
494. Methyl chloride, Chloromethane (X,I)
495. *Methyl chloroformate, Methyl chlorocarbonate (X,I,R)
496. *Methyl chloromethyl ether, CMME (X,I)
497. Methylcyclohexane (X,I)
498. *Methyldichloroarsine (X)
499. *Methyldichlorosilane (X,I,R)
500. *4,4-Methylene bis(2-chloroaniline), MOCA (X)
501. Methyl ethyl ether (X,I)
502. Methyl ethyl ketone, 2-Butanone (X,I)
503. Methyl ethyl ketone peroxide (X,I)
504. Methyl formate (X,I)
505. *Methyl hydrazine, Monomethyl hydrazine, MMG (X,I)
506. *Methyl isocyanate (X,I)
507. Methyl isopropenyl ketone, 3-Methyl-3-butene-2-one (X,I)
508. *Methylmagnesium bromide (C,I,R)
509. *Methylmagnesium chloride (C,I,R)
510. *Methylmagnesium iodide (C,I,R)
511. Methyl mercaptan, Methanethiol (X,I)
512. Methyl methacrylate (monomer) (X,I)
513. *Methyl parathion; O,O-Dimethyl-O-para-nitrophenyl-phosphorothioate (X)
514. Methyl propionate (I)
515. *Methyltrichlorosilane (X,C,I,R)
516. Methyl valerate, Methyl pentanoate (and isomers) (I)
517. Methyl vinyl ketone, 3-Butene-2-one (X,I)
518. *Mevinphos, PHOSDRIN, 2-Carbomethoxy-1-methylvinyl dimethylphosphate (X)
519. *Mirex; 1,1a,2,2,3,3a,4,5,5a,5b,6-Dodecachlorooctahydro-1,3,4-metheno-1H-cyclobuta (cd) pentalene, Dechlorane (X)
520. *MOCAP, O-Ethyl-S,S-dipropyl phosphorodithioate (X)
521. Molybdenum (powder) (I)
522. Molybdenum trioxide, Molybdenum anhydride (X)
523. Molybdic acid and salts (X)
524. Monochloroacetic acid, Chloracetic acid, MCA (X,C)
525. Monochloroacetone, Chloroacetone, 1-Chloro-2-propanone (X)
526. Monofluorophosphoric acid (X,C)
527. Naphtha (of petroleum or coal tar origin), Petroleum ether, Petroleum naphtha (X,I)
528. Naphthalene (X)
529. *alpha-Naphthylamine, 1-NA (X)
530. *beta-Naphthylamine, 2-NA (X)
531. Neohexane; 2,2-Dimethylbutane (X,I)
532. Nickel (powder) (X,I)
533. Nickel acetate (X)
534. Nickel antimonide (X)
535. *Nickel arsenate, Nickelous arsenate (X)
536. *Nickel carbonyl, Nickel tetracarbonyl (X)
537. Nickel chloride, Nickelous chloride (X)
538. *Nickel cyanide (X)
539. Nickel nitrate, Nickelous nitrate (X,I,R)
540. Nickel selenide (X)
541. Nickel sulfate (X)
542. Nicotine, beta-pyridyl-alpha-N-methyl pyrrolidine (X)
543. Nicotine salts (X)
544. Nitric acid (X,C,I)

545. Nitroaniline, Nitraniline (ortho, meta, para) (I,R)
546. *Nitrobenzol, Nitrobenzene (X)
547. *4-Nitrobiphenyl, 4-NBP (X)
548. Nitro carbo nitrate (I,R)
549. Nitrocellulose, Cellulose nitrate, Guncotton, Pyroxylin, Collodion, Pyroxylin (nitrocellulose) in ether and alcohol (I,R)
550. Nitrochlorobenzene, Chloronitrobenzene (ortho, meta, para) (X)
551. Nitrogen mustard (X,C)
552. Nitrogen tetroxide, Nitrogen dioxide (X,I)
553. Nitroglycerin, Tinitroglycerin (X,I,R)
554. Nitrohydrochloric acid, Aqua regia (X,C,I)
555. *Nitrophenol (ortho, meta, para) (X)
556. *N-Nitrosodimethylamine, Dimethyl nitrosoamine (X)
557. Nitrosoguanidine (R)
558. Nitrostarch, Starch nitrate (I,R)
559. Nitroxylol, Nitroxylene, Dimethylnitrobenzene (2,4-;3,4-;2,5-isomers) (X)
560. 1-Nonene, 1-Nonylene (and isomers) (X,I)
561. *Nonyltrichlorosilane (I,R)
562. *Octadecyltrichlorosilane (I,R)
563. n-Octane (and isomers) (X,I)
564. 1-Octene, 1-Caprylene (X,I)
565. *Octyltrichlorosilane (I,R)
566. [No chemical listed]
567. *Oleum, Fuming sulfuric acid (X,C,R)
568. Osmium compounds (X)
569. Oxalic acid (X)
570. *Oxygen difluoride (X,C,R)
571. *Para-oxon, MINTACOL; O-O-Diethyl-O-para-nitrophenyl phosphate (X)
572. *Parathion; O-O-Diethyl-O-para-nitrophenyl phosphorothioate (X)
573. *Pentaborane (X,I,R)
574. Pentachlorophenol, PCP, DOWICIDE 7 (X)
575. Pentaerythrite tetranitrate, Pentaerythritol tetranitrate (R)
576. n-Pentane (and isomers)
577. 2-Pentanone, Methyl propyl ketone (and isomers) (X,I)
578. Peracetic acid, Peroxyacetic acid (X,C,I,R)
579. Perchloric acid (X,C,I,R)
580. Perchloroethylene, Tetrachloroethylene (X)
581. *Perchloromethyl mercaptan, Trichloromethylsulfenyl chloride (X)
582. Perchloryl fluoride (X,C,I)
583. [No chemical listed]
584. Phenol, Carbolic acid (X,C)
585. *Phenyldichloroarsine (X)
586. Phenylenediamine, Diaminobenzene (ortho, meta, para) (X)
587. Phenylhydrazine hydrochloride (X)
588. *Phenylphenol, Orthozenol, DOWICIDE I (X)
589. *Phenyltrichorosilane (I,R)
590. *Phorate, THIMET; O-O-Diethyl-S-[(Ethylthio)methyl] phosphorodithioate (X)
591. *Phosfolan, CYOLAN, 2-(Diethoxyphosphinylimino)-1,3-dithio-lane (X)
592. *Phosgene, Carbonyl chloride (I,R)
593. *Phosphamidon, DIMECRON, 2-Chloro-2-diethyl-carbamoyl-1-methylvinyl dimethyl phosphate (X)
594. *Phosphine, Hydrogen phosphide (X,I)
595. Phosphoric acid (C)
596. Phosphoric anhydride, Phosphorus pentoxide (C,I)
597. Phosphorus (amorphous, red) (X,I,R)

598. *Phosphorus (white or yellow) (X,I,R)
599. *Phosphorus oxybromide, Phosphoryl bromide (X,C,R)
600. *Phosphorus oxychloride, Phosphoryl chloride (X,C,R)
601. *Phosphorus pentachloride, Phosphoric chloride (X,C,I,R)
602. *Phosphorus pentasulfide, Phosphoric sulfide (X,C,I,R)
603. *Phosphorus sesquisulfide, tetraphosphorus trisulfide (X,C,I,R)
604. *Phosphorus tribromide (X,C,R)
605. *Phosphorus trichloride (X,C,R)
606. Picramide, Trinitroaniline (I,R)
607. Picric acid, Trinitrophenol (I,R)
608. Picryl chloride, 2-Chloro-1,3,5-trinitrobenzene (I,R)
609. *Platinum compounds (X)
610. *Polychlorinated biphenyls, PCB, Askarel, aroclor, chlorextol, inerteen, pyranol (X)
611. Polyvinyl nitrate (I,R)
612. Potasan; O,O-Diethyl-0-(4-methylumbelliferone) phosphoro-thioate (X)
613. *Potassium (C,I,R)
614. *Potassium arsenate (X)
615. *Potassium arsenite (X)
616. *Potassium bifluoride, Potassium acid fluoride (X,C)
617. Potassium binoxalate, Potassium acid oxalate (X)
618. Potassium bromate (X,I)
619. *Potassium cyanide (X)
620. Potassium dichloroisocyanurate (X,I)
621. Potassium dichromate, Potassium bichromate (X,C,I)
622. [No chemical listed]
623. Potassium fluoride (X)
624. *Potassium hydride (C,I,R)
625. Potassium hydroxide, Caustic potash (X,C)
626. Potassium nitrate, Saltpeter (I,R)
627. Potassium nitrite (I,R)
628. Potassium oxalate (X)
629. Potassium perchlorate (X,I,R)
630. Potassium permanganate (X,C,I)
631. Potassium peroxide (C,I,R)
632. Potassium sulfide (X,I)
633. *Propargyl bromide, 3-Bromo-1-propyne (X,I)
634. *beta-Propiolactone, BPL (X)
635. Propionaldehyde, Propanal (X,I)
636. Propionic acid, Proanoic acid (X,C,I)
637. n-Propyl acetate (X,I)
638. n-Propyl alcohol, 1-Propanol (X,I)
639. n-Propylamnie (and isomers) (X,I)
640. *Propyleneimine, 2-Methylaziridine (X,I)
641. Propylene oxide (X,I)
642. n-Propyl formate (X,I)
643. n-Propyl mercaptan, 1-Propanethiol (X,I)
644. *n-Propyltrichlorosilane (X,C,I,R)
645. *Prothoate, FOSTION, FAC; O,O-Diethyl-S-carboethoxy-ethyl phosphorodithioate (X)
646. Pyridine (X,I)
647. *Pyrosulfuryl chloride, Disulfuryl chloride (X,C,R)
648. *Quinone; 1,4-Benzoquinone (X)
649. Raney nickel (I)
650. *Schradan, Octamethyl pyrophosphoramide, OMPA (X)
651. *Selenium (X)
652. *Selenium compounds (X)
653. *Selenium fluoride (X)
654. *Selenous acid, Selenious acid and salts (X)

655. *Silicon tetrachloride, Silicon chloride (X,C,R)
656. *Silver acetylide (I,R)
657. Silver azide (I,R)
658. Silver compounds (X)
659. Silver nitrate (X)
660. Silver styphnate, Silver trinitroresorcinate (I,R)
661. Silver tetrazene (I,R)
662. *Sodium (C,I,R)
663. Sodium aluminate (C)
664. *Sodium aluminum hydride (C,I,R)
665. *Sodium amide, Sodamide (C,I,R)
666. *Sodium arsenate (X)
667. *Sodium arsenite (X)
668. Sodium azide (I,R)
669. *Sodium bifluoride, Sodium acid fluoride (X,C)
670. Sodium bromate (X,I)
671. *Sodium cacodylate, Sodium fimethylarsenate (X)
672. Sodium carbonate peroxide (I)
673. Sodium chlorate (X,I)
674. Sodium chlorite (X,I)
675. Sodium chromate (X,C)
676. *Sodium cyanide (X)
677. Sodium dichloroisocyanurate (I)
678. Sodium dichromate, Sodium bichromate (X,C,I)
679. Sodium fluoride (X)
680. *Sodium hydride (X,C,I,R)
681. Sodium hydrosulfite, Sodium hyposulfite (I)
682. Sodium hydroxide, Caustic soda, Lye (X,C)
683. *Sodium hypochlorite (X,I,R)
684. *Sodium methylate, Sodium methoxide (C,I,R)
685. Sodium molybdate (X)
686. Sodium nitrate, Soda niter (X,I,R)
687. Sodium nitrite (X,I,R)
688. Sodium oxide, Sodium monoxide (X,C)
689. Sodium perchlorate (X,I,R)
690. Sodium permanganate (X,I)
691. *Sodium peroxide (X,I,R)
692. Sodium picramate (X,I,R)
693. *Sodium potassium alloy, NaK, NaCK (C,I,R)
694. *Sodium selenate (X)
695. Sodium sulfide, Sodium hydrosulfide (X,I)
696. Sodium thiocyanate, Sodium sulfocyanate (X)
697. Stannic chloride, Tin tetrachloride (X,C)
698. *Strontium arsenate (X)
699. Strontium nitrate (X,I,R)
700. Strontium peroxide, Strontium dioxide (I,R)
701. *Strychnine and salts (X)
702. Styrene, Vinylbenzene (X,I)
703. Succinic acid peroxide (X,I)
704. Sulfide salts (soluble) (X)
705. *Sulfotepp, DITHIONE, BLACAFUM, Tetraethyldithio-pyrophosphate, TEDP (X)
706. *Sulfur chloride, Sulfur monochloride (X,C,R)
707. *Sulfur mustard (X,C,R)
708. *Sulfur pentafluoride (X,C)
709. *Sulfur trioxide, Sulfuric anhydride (X,C,I)
710. Sulfuric acid, Oil of vitriol, Battery acid (X,C)
711. Sulfurous acid (X,C)
712. *Sulfuryl chloride, Sulfonyl chloride (X,C,R)
713. *Sulfuryl fluoride, Sulfonyl fluoride (X,C,R)
714. *SUPRACIDE, ULTRACIDE, S-[(5-Methoxy-2-oxo-1,3,4-thia-diazol3(2H)-yl) methyl]-O,O-dimethyl phosphorodithioate (X)
715. SURECIDE, Cyanophenphos,

O-para-Cyanophenyl-O-ethyl phenyl phosphonothioate (X)

716. *Tellurium hexafluoride (X,C)

717. *TELODRIN, Isobenzan; 1,3,4,5,6,7,8,8-Octachloro-1,3,3a,4,7,7a-hexahydro-4,7-methanoisobenzofuran (X)

718. *TEMIK, Aldicarb, 2-Methyl-2(methylthio) propionaldehyde-O-(methylcarbamoyl) oxime (X)

719. *2,3,7,8-Tetrachlorodibenzo-para-dioxin, TCDD, Dioxin (X)

720. sym-Tetrachloroethane (X)

721. [No chemical listed]

722. *Tetraethyl lead, TEL (and other organic lead) (X,I)

723. *Tetraethyl pyrophosphate, TEPP (X)

724. Tetrahydrofuran, THF (X,I)

725. Tetrahydrophthalic anhydride, Memtetrahydrophthalic anhydride (X)

726. TETRALIN, Tetrahydronaphthalene (X)

727. Tetramethyl lead, TML (X,I)

728. *Tetramethyl succinonitrile (X)

729. *Tetranitromethane (X,I,R)

730. *Tetrasul, ANIMERT V-101, S-para-Chlorophenyl-2,4,5-trichlorophenyl sulfide (X)

731. Tetrazene, 4-Amidino-1-(nitrosamino-amidino)-1-tetra-zene (I,R)

732. *Thallium (X)

733. *Thallium compounds (X)

734. *Thallous sulfate, Thallium sulfate, RATOX (X)

735. *Thiocarbonylchloride, Thiophosgene (X,C,R)

736. *Thionazin, ZINOPHOS; O,O-Tetramethylthiuram monosulfide (X)

737. *Thionyl chloride, Sulfur oxychloride (X,C,R)

738. Thiophosphoryl chloride (X,C,R)

739. Thorium (powder) (I)

740. Tin compounds (organic) (X)

741. Titanium (powder) (I)

742. Titanium sulfate (X)

743. *Titanium tetrachloride, Titanic chloride (X,C,R)

744. Toluene, Methylbenzene (X,I)

745. *Toluene-2,4-diisocyanate, TDI (I,R)

746. Toluidine, Aminotoluene (ortho, meta, para) (X)

747. *Toxaphene, Polychlorocamphene (X)

748. *TRANID, exo-3-Chloro-endo-6-cyano-2-norbornanone-O-(methylcarbamoyl) oxime (X)

749. [No chemical listed]

750. 1,1,2-Trichloroethane (X)

751. Trichloroethylene; Trichlorethene (X)

752. Trichloroisocyanuric acid (X,I)

753. *2,4,5-Trichlorophenoxyacetic acid; 2,4,5-T (X)

754. *Trichlorosilane, Silicochloroform (X,C,I,R)

755. Trimethylamine, TMA (X,I)

756. Trinitroanisole; 2,4,6-Trinitrophenyl methyl ether (I,R)

757. 1,3,5-Trinitrobenzene, TNB (I,R)

758. 2,4,6-Trinitrobenzoic acid (I,R)

759. Trinitronaphthalene, Naphtite (I,R)

760. 2,4,6-Trinitroresorcinol, Styphnic acid (I,R)

761. 2,4,6-Trinitrotoluene, TNT (X,I,R)

762. *tris(1-Aziridinyl) phosphine oxide, Triethylenephosphoramide, TEPA (X)

763. Tungstic acid and salts (X)

764. Turpentine (X,I)

765. Uranyl nitrate, Uranium nitrate (X,I,R)

766. Urea nitrate (X,I,R)

767. n-Valeraldehyde, n-Pentanal (and isomers) (X,I)

768. Vanadic acid salts (X)

769. Vanadium oxytrichloride (X,C)

770. *Vanadium pentoxide, Vanadic acid anhydride (X)

771. Vanadium tetrachloride (X,C)

772. Vanadium tetraoxide (X)

773. Vanadium trioxide, Vanadium sesquioxide (X)

774. Vanadyl sulfate, Vanadium sulfate (X)

775. Vinyl acetate (X,I)

776. *Vinyl chloride (X,I)

777. Vinyl ethyl ether (I)

778. Vinylidene chloride, VC (X,I)

779. Vinyl isporopyl ether (I)

780. *Vinyltrichlorosilane (X,C,I,R)

781. VX, O-Ethyl methyl phosphoryl N,N-diisopropyl thiocholine (X)

782. *WEPSYN 155, WP 155, Tramiphos, para-(5-Amino-3-phenyl-1H-1,2,4-triazol-1-yl)-N,N,N',N'-tetramethyl phosphonic diamide (X)

783. Xylene, Dimethylbenzene (ortho, meta, para) (X,I)

784. Zinc (powder) (I)

785. Zinc ammonium nitrate (X,I)

786. *Zinc arsenate (X)

787. *Zinc arsenite (X)

788. Zinc chloride (X,C)

789. Zinc compounds (X)

790. *Zinc cyanide (X)

791. Zinc nitrate (X,I,R)

792. Zinc permanganate (X,I)

793. Zinc peroxide, Zinc dioxide (X,I,R)

794. Zinc phosphide (X,I,R)

795. Zinc sulfate (X)

796. Zirconium (powder) (I)

797. *Zirconium chloride, Zirconium tetrachloride (X,C,R)

798. Zirconium picramate (I)

*A chemical is presumed to be an extremely hazardous waste unless it does not exhibit any of the criteria set forth in 22 CCR §66261.110 and §66261.113.

I. CHARACTERISTIC RCRA & NON-RCRA HAZARDOUS WASTES

General (RCRA & Non-RCRA)

The RCRA and non-RCRA hazard characteristics are indicated by the following letters:

RCRA	NON-RCRA
Ignitable waste (I)	Ignitable waste (I)
Corrosive waste (C)	Corrosive waste (C)
Reactive waste (R)	Reactive waste (R)
Acute hazardous waste (H)	Extremely hazardous waste (*)
Toxic waste (T)	Toxic waste (X)

Each RCRA listed and characteristic waste is assigned a U.S. EPA hazardous waste number that precedes the name of the waste or characteristic waste. DTSC uses a different scheme. California waste codes are discussed later in this section.

Characteristic of Ignitability – D001 (RCRA & Non-RCRA) [22 CCR §66262.21]

A waste exhibits the characteristic of ignitability, as indicated by representative samples, if it:

- Is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point lower than 60°C (140°F) as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference; see 22 CCR §66260.11), or a Setaflash

Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference; see 22 CCR §66260.11), or as determined by an equivalent test method approved by DTSC pursuant to 22 CCR §66260.21

- Is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard; U.S. EPA SW-846 specifies the use of the "burn-rate" test; however, EPA recognizes limitations of that test and therefore the test may not be applicable for some non-aqueous types of waste, in which case generator knowledge, possibly with some limited testing, may be necessary
- Is an ignitable compressed gas; a compressed gas is characterized as ignitable if any one of the following occurs:
  - » Either a mixture of 13 percent or less (by volume) with air forms a flammable mixture; OR
  - » The flammable range with air is wider than 12 percent regardless of the lower limit; these limits are to be determined at atmospheric temperature and pressure
- Is an oxidizer or organic peroxide
  - » An oxidizer is a substance such as a chlorate, permanganate, inorganic peroxide, or nitrate that yields oxygen readily to stimulate the combustion of organic materials
  - » An organic peroxide is a substance containing the bivalent -O-O- structure and that may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals must be classed as an organic peroxide

Characteristic of Corrosivity – D002 (RCRA) [22 CCR §66261.22]

A waste exhibits the characteristic of corrosivity, as indicated by representative samples, if it:

- Is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either the U.S. EPA test method for pH or an equivalent test method approved by DTSC pursuant to 22 CCR §66260.21; the U.S. EPA test method for pH is specified as Method 9040 in *Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, SW-846, 3rd edition* and updates (incorporated by reference; see 22 CCR §66260.11) (RCRA and non-RCRA); OR
- Is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.25 in) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE Standard TM-01-69 as standardized in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd edition* and updates (incorporated by reference; see 22 CCR §66260.11) or an equivalent test method approved by DTSC pursuant to 22 CCR §66260.21 (RCRA and non-RCRA)

Characteristic of Corrosivity (Non-RCRA) [22 CCR §66261.22]

A waste exhibits the characteristic of corrosivity (non-RCRA), as indicated by representative samples, if it meets the RCRA criteria above and/ or the following:

- Is not aqueous and, when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either Method 9040 in *Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, SW-846, 3rd edition* and updates (incorporated by reference; see 22 CCR §66260.11) or an equivalent test method approved by DTSC pursuant to 22 CCR §66260.21 (non-RCRA)
- Is not a liquid and, when mixed with an equivalent weight of water, produces a liquid that corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.25 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE Standard TM-01-69 as standardized in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd edition* and updates (incorporated by reference; see 22 CCR §66260.11) or an equivalent test method approved by DTSC pursuant to 22 CCR §66260.21 (non-RCRA)

Characteristic of Reactivity – D003 (RCRA & Non-RCRA) [22 CCR §66261.23]

A waste exhibits the characteristic of reactivity if representative samples of the waste:

- Are normally unstable and readily undergo violent change without detonating
- React violently with water (water-reactive wastes are extremely hazardous waste)
- Form potentially explosive mixtures with water
- Generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger when mixed with water
- Are cyanide- or sulfide-bearing waste that, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment (it is important to note that, due to flaws in the reactive-cyanide and reactive-sulfide tests, U.S. EPA has vacated use of these testing procedures from SW-846; therefore, generator knowledge is used for determining whether a waste is reactive)
- Are capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement
- Are readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure
- Are forbidden explosives as defined in 49 CFR §173.51 (as amended April 20, 1987), Class A explosives as defined in 49 CFR §173.53 (as amended April 5, 1967), or Class B explosives as defined in 49 CFR §173.88 (as amended May 19, 1980)

A waste that exhibits the characteristic of reactivity has the U.S. EPA hazardous waste number of D003.

Characteristic of Toxicity – D004-D043 (RCRA Only) [22 CCR §6626.24(a)(1)(B)]

A waste exhibits the characteristic of toxicity when, using the Toxicity Characteristic Leaching Procedure or equivalent methods, the extracts from representative samples of the waste contain any of the contaminants listed in Table I [see page 74] at a concentration equal to or greater than the respective value given in that table unless the waste is excluded from classification as a solid waste or hazardous waste or is exempted from regulation pursuant to 40 CFR §261.4. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

Characteristic of Toxicity (Non-RCRA Only) [22 CCR §66261.24(a)(2)(A-B)]

A waste exhibits the characteristic of toxicity if it:

- Contains a substance listed in Table II [see page 75] or Table III [see page 76] of this section at a concentration in milligrams per liter of waste extract, as determined using the Waste Extraction Test (WET), that equals or exceeds its listed soluble threshold limit concentration or at a concentration in milligrams per kilogram in the waste that equals or exceeds its listed total threshold limit concentration
- Has an acute oral LD_{50} less than 2,500 milligrams per kilogram (non-RCRA)
- Has an acute dermal LD_{50} less than 4,300 milligrams per kilogram (non-RCRA)
- Has an acute inhalation LC_{50} less than 10,000 parts per million as a gas or vapor (non-RCRA)
- Has a 96-hour Acute Aquatic Bioassay-LC_{50} less than 500 milligrams per liter when measured in soft water (total hardness 40 to 48 milligrams per liter of calcium carbonate) with fathead minnows (*Pimephales promelas*), rainbow trout (*Oncorhynchus mykiss*), or golden shiners (*Notemigonus crysoleucas*) according to procedures described in Part 800 of the *Standard Methods for the Examination of Water and Wastewater, 16th Edition, American Public Health Association, 1985* and *Static Acute Bioassay Procedures for Hazardous Waste Samples, California Department of Fish and Game, Water Pollution Control Laboratory, revised November 1988* (incorporated by reference; see 22 CCR §66260.11), or by other test methods or test fish approved by DTSC, using test samples prepared or meeting the conditions for testing as prescribed in Subdivisions (c) and (d) of Appendix II of 22 CCR Chapter 11, and solubilized, suspended, dispersed, or emulsified by the cited procedures

or by other methods approved by DTSC (non-RCRA)

  - » The static test consists of placing ten fish (fathead minnows, rainbow trout, or golden shiners) into tanks with different concentration of the waste where one tank does not contain the waste and is called the control tank; after four days, the number of fish in each tank is counted; the concentration of waste in which 50% of the test population dies is the LC_{50}

- Contains any of the following carcinogenic substances at a single or combined concentration equal to or exceeding 0.001 percent by weight (10 ppm) (non-RCRA):
  - » 2-Acetylaminofluorene (2-AAF)
  - » Acrylonitrile
  - » 4-Aminodiphenyl
  - » Benzidine and its salts
  - » bis (Chloromethyl) ether (BCME)
  - » Methyl chloromethyl ether
  - » 1,2-Dibromo-3-chloropropane (DBCP)
  - » 3,3-Dichlorobenzidine and its salts (DCB)
  - » 4-Dimethylaminoazobenzene (DAB)
  - » Ethyleneimine (EL)
  - » alpha-Naphthylamine (1-NA)
  - » beta-Naphthylamine (2-NA)
  - » 4-Nitrobiphenyl (4-NBP)
  - » N-Nitrosodimethylamine (DMN)
  - » beta-Propiolactone (BPL)
  - » Vinyl chloride (VCM)
- Has been shown through experience or testing to pose a hazard to human health or environment because of its carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment (non-RCRA)

A waste containing one or more materials that exhibit the characteristic of toxicity because the materials have the property specified in Title 22 may be classified as non-hazardous pursuant to 22 CCR §66260.200 if the waste does not exhibit any other characteristic or is not listed in 22 CCR Article 4 of Chapter 11 and its head space vapor contains no such toxic materials in concentrations exceeding their respective acute inhalation LC_{50} or their LCLo. The head space vapor of a waste is to be prepared, and two milliliters of it are to be sampled using a five milliliter gas-tight syringe, according to Method 5020 in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd edition, U.S. Environmental Protection Agency, 1982* (incorporated by reference; see 22 CCR §66260.11). The quantity in milligrams of each material that exhibits the characteristic of toxicity (because it has an acute inhalation LC_{50} < 10,000 ppm) in the sampling syringe is to be determined by comparison to liquid standard solutions according to the appropriate gas chromatographic procedures in Method 8010, 8015, 8020, 8030, or 8240 in *Test Methods for Evaluation Solid Waste, Physical/Chemical Methods, SW-846, 3rd edition, U.S. Environmental Protection Agency, 1986* (incorporated by reference; see 22 CCR §66260.11). The concentration of each material in the head space vapor is to be calculated using the following equation:

$$C_A = \frac{Q_A}{MW} \times \frac{29.8ml}{mmole} \times \frac{1}{2x10^{-6}M^3}$$

Where C (in parts per million) is the concentration of material A in head space vapor, Q (in milligrams) is the quantity of material A in sampling syringe, and MW (in milligrams per millimole) is the molecular weight of material A. Where an acute inhalation LC_{50} is not available, and LC_{50} measured for another time (t) may be converted to an eight-hour value with the following equation:

$$\text{Eight-hour } LC_{50} = (t/8) \times (\text{t-hour } LC_{50})$$

A waste containing one or more materials that exhibit the characteristic of toxicity (because the materials have either an oral LD_{50} < 2,500 mg/kg or a dermal LD_{50} < 4,300 mg/kg) may be classified as nonhazardous pursuant to 22 CCR §66260.200 if the waste does not exhibit any other characteristic of this article and is not listed in article 4 of this chapter and the calculated oral LD_{50} of the waste mixture is greater than 5,000 milligrams per kilogram and

the calculated dermal LD_{50} is greater than 4,300 milligrams per kilogram by the following equation, where $\%A_X$ is the weight percent of each component in the waste mixture and ${}^{T}A_X$ is the acute or dermal LD_{50} or the acute oral LDLo of each component.:

$$\text{Calculated oral or dermal } LD_{50} = \frac{100\%}{\sum_{x=1}^{n} \frac{\%A_X}{{}^{T}A_X}} \quad N\%$$

TABLE I. Maximum Concentration of Contaminants for the Toxicity Characteristic (RCRA Only)

EPA HAZARDOUS WASTE NUMBER	CONTAMINANT	CHEMICAL ABSTRACTS SERVICE NUMBER	REGULATORY LEVEL (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0[1]
D024	m-Cresol	108-39-4	200.0[1]
D025	p-Cresol	106-44-5	200.0[1]
D026	Cresol	----------	200.0[1]
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0[2]

EPA HAZARDOUS WASTE NUMBER	CONTAMINANT	CHEMICAL ABSTRACTS SERVICE NUMBER	REGULATORY LEVEL (mg/L)
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	88-06-2	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

1. If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
2. Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

TABLE II. List of Inorganic Persistent & Bioaccumulative Toxic Substances & their Soluble Threshold Limit Concentration (STLC) (Non-RCRA Only) & Total Threshold Limit Concentration (TTLC) Values

SUBSTANCE[a,b]	STLC (mg/L)	TTLC WET-WEIGHT (mg/kg)
Antimony and/or antimony compounds	1.5	500
Arsenic and/or arsenic compounds	5.0	500
Asbestos	----------	1.0 (as percent)
Barium and/or barium compounds (excluding barite)	100	10,000[c]
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1.0	100
Chromium (VI) compounds	5	500
Chromium and/or chromium (III) compounds	5[d]	2,500
Cobalt and/or cobalt compounds	80	8,000
Copper and/or copper compounds	25	2,500
Fluoride salts	180	18,000
Lead and/or lead compounds	5.0	1,000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3,500[e]
Nickel and/or nickel compounds	20	2,000
Selenium and/or selenium compounds	1.0	100
Silver and/or silver compounds	5	500

SUBSTANCE[a,b]	STLC (mg/L)	TTLC WET-WEIGHT (mg/kg)
Thallium and/or thallium compounds	7.0	700
Vanadium and/or vanadium compounds	24	2,400
Zinc and/or zinc compounds	250	5,000

a. STLC and TTLC values are calculated on the concentration of the elements, not the compounds.
b. In the case of asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state. Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.
c. Excluding barium sulfate
d. If the soluble chromium, as determined by the TCLP set forth in Appendix I of chapter 18 of this division, is less than 5 mg/L, and the soluble chromium, as determined by the procedures set forth in Appendix II of chapter 11, equals or exceeds 560 mg/L and the waste is not otherwise identified as a RCRA hazardous waste pursuant to section 66261.100, then the waste is a non-RCRA hazardous waste.
e. Excluding molybdenum disulfide.

TABLE III. List of Organic Persistent & Bioaccumulative Toxic Substances & their Soluble Threshold Limit Concentration (STLC) & Total Threshold Limit Concentration (TTLC) Values (Non-RCRA Only)

SUBSTANCE	STLC (mg/L)	TTLC WET-WEIGHT (mg/kg)
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1.0
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8.0
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	----------	13
Lindane	0.4	4.0
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Polychlorinated biphenyls (PCBs)	5.0	50
Toxaphene	0.5	5
Trichloroethylene	204	2,040
2,4,5-Trichlorophenoxypropionic acid	1.0	10

J. THREE ELEMENTS OF THE MIXTURE RULE (RCRA WASTES)

1. When a characteristic waste (CW) is mixed with a solid waste (SW), the resulting mixture is hazardous only if it continues to exhibit a hazardous waste characteristic.

CW + SW = RCRA HW → if exhibits characteristic

D002 + Wastewater = pH > 2 → not a RCRA HW

2. Some wastes are listed solely because they exhibit a characteristic. For example, F003 spent solvents are listed solely because they are ignitable. A listed waste falls into this category if it is followed by the notation I, C, or R only. These listed wastes are managed much like characteristic wastes under the mixture rule.

NOTE: LDRs still apply to the mixture.

Listed (I, C, or R only) + SW, if it no longer exhibits the characteristic (I, C, or R), is not a RCRA HW.

F003 + SW = FP > 140°F → waste is not a RCRA HW

3. Toxic or acute toxic listed wastes (annotated with the letters T or H), when mixed with a SW, remain listed wastes. The only way to remove this type of waste mixture from RCRA regulations is to delist.

Listed toxic/acute HW (F, K, P, U) + SW = remains a listed (F, K, P, U) HW

NOTE: Mixing is treatment and may be subject to permit and LDR requirements.

K. EXTREMELY HAZARDOUS WASTES

A waste or a material is considered to be extremely hazardous if any of the following applies:

- The waste has an acute oral LD_{50} less than or equal to 50 mg/kg;
- The waste has an acute dermal LD_{50} less than or equal to 43 mg/kg;
- The waste has an acute inhalation LC_{50} less than or equal to 100 ppm;
- The waste contains any of the listed carcinogens with a concentration equal to or exceeding 0.1 percent by weight (1,000 ppm);
- It has been shown through experience or testing that human exposure to the waste or material may likely result in death, disabling personal injury, or serious illness because of the carcinogenicity, high acute or chronic toxicity, bioaccumulative properties, or persistence in the environment of the waste or material; OR
- The waste is water-reactive (D003)

L. USED OIL [HSC §25250]

Used oil is:

- Oil that has been refined from crude oil; OR
- Any synthetic oil that has been used, and, as a result of use or as a consequence of extended storage or spillage, has been contaminated with physical or chemical impurities

Examples of used oil include:

- Spent lubricating fluids that have been removed from an engine crankcase, transmission, gearbox, or differential of an automobile, bus, truck, vessel, plane, heavy equipment, or machinery powered by an internal combustion engine
- Industrial oils, including compressor, turbine, and bearing oil
- Hydraulic oil
- Metalworking oil
- Refrigeration oil
- Railroad drainings

Used oil does **not** include any of the following:

- Oil that has a flash point below 100°F or that has been mixed with hazardous waste other than minimal amounts of vehicle fuel
- Wastewater, including wastewaters at facilities that have eliminated the discharge of wastewater, contaminated with de minimis quantities of used oil; "de minimis quantities of used oil" are small spills, leaks, or drippings from pumps, machinery, pipes, and other similar equipment during normal operations or small amounts of oil lost to the wastewater treatment system during washing or draining operations
- Used oil re-refining distillation bottoms that

are used as feedstock to manufacture asphalt products

- Oil that contains polychlorinated biphenyls (PCBs) at a concentration of 5 ppm or greater
- Oil containing more than 1,000 ppm total halogens (fluorine, chlorine, bromine, iodine, and astatine), which will be presumed to be a hazardous waste because it has been mixed with listed halogenated hazardous waste

Used oil must be managed as a hazardous waste unless one of the following applies:

- The used oil is excluded from regulation as hazardous waste pursuant to HSC §25143.2 and is not subject to regulation as hazardous waste under the federal act; OR
- The used oil has been shown by the generator to be exempt from hazardous waste management standards or the used oil meets the requirements for recycled oil

Used oil cannot be intentionally contaminated with other hazardous waste other than minimal amounts of vehicle fuel.

M. CALIFORNIA WASTE CODES [22 CCR, Ch.11, Appendix XII]

RESTRICTED WASTES[1]

711. Liquids with cyanides ≥ 1,000 mg/L
721. Liquids with arsenic ≥ 500 mg/L
722. Liquids with cadmium ≥ 100 mg/L
723. Liquids with chromium (VI) ≥ 500 mg/L
724. Liquids with lead ≥ 500 mg/L
725. Liquids with mercury ≥ 20 mg/L
726. Liquids with nickel ≥ 134 mg/L
727. Liquids with selenium ≥ 100 mg/L
728. Liquids with thallium ≥ 130 mg/L
731. Liquids with polychlorinated biphenyls ≥ 50 mg/L
741. Liquids with halogenated organic compounds ≥ 1,000 mg/L
751. Solids or sludges with halogenated organic compounds ≥ 1,000 mg/kg
791. Liquids with pH ≤ 2
792. Liquids with pH ≤ 2 with metals
801. Waste potentially containing dioxins

1. SB 122 repealed the majority of restricted wastes. Only six categories remain restricted. See Section VI of this manual.

INORGANICS

121. Alkaline solution with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc), pH ≥ 12.5
122. Alkaline solution without metals, pH ≥ 12.5
123. Unspecified alkaline solution
131. Aqueous solution containing reactive anions (azide, bromate, chlorate, cyanide, fluoride, hypochlorite, nitrite, perchlorate, and sulfide anions), pH > 2 and < 12.5
132. Aqueous solution with metals (restricted levels; see waste code 121 for a metals list)
133. Aqueous solution with total organic residues ≥ 10%
134. Aqueous solution with total organic residues < 10%
135. Unspecified aqueous solution
141. Off-specification, aged, or surplus inorganics
151. Asbestos-containing waste
161. Fluid-cracking catalyst (FCC) waste
162. Other spent catalyst
171. Metal sludge (see waste code 121)
172. Metal dust (see waste code 121) and machine waste
181. Other inorganic solid waste

ORGANICS

211. Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)
212. Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
213. Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

214. Unspecified solvent mixture
221. Waste oil and mixed oil
222. Oil/water separation sludge
223. Unspecified oil-containing waste
231. Pesticide rinse water
232. Pesticides and other waste associated with pesticide production
241. Tank bottom waste
251. Still bottoms with halogenated organics
252. Other still bottom waste
261. Polychlorinated biphenyls and material containing PCBs
271. Organic monomer waste (includes unreacted resins)
272. Polymeric resin waste
281. Adhesives
291. Latex waste
311. Pharmaceutical waste
321. Sewage sludge
322. Biological waste other than sewage sludge
331. Off-specification, aged, or surplus organics
341. Organic liquids (non-solvents) with halogens
342. Organic liquids with metals (see waste code 121)
343. Unspecified organics liquid mixture
351. Organic solids with halogens
352. Other organic solids

SLUDGES

411. Alum and gypsum sludge
421. Lime sludge
431. Phosphate sludge
441. Sulfur sludge
451. Degreasing sludge
461. Paint sludge
471. Paper sludge/pulp
481. Tetraethyl lead sludge
491. Unspecified sludge waste

MISCELLANEOUS

511. Empty pesticide containers ≥ 30 gallons
512. Other empty containers ≥ 30 gallons
513. Empty containers < 30 gallons
521. Drilling mud
531. Chemical toilet waste
541. Photochemicals/photoprocessing waste
551. Laboratory waste chemicals
561. Detergent and soap
571. Fly ash, bottom ash, and retort ash
581 Gas-scrubber waste
591. Baghouse waste
611. Contaminated soil from site cleanups
612. Household wastes
613. Auto shredder waste
614. Treated wood waste

The Mercury Waste Classification and Management Regulation, which went into effect March 15, 2002, assigned waste codes to the following mercury-containing products. These wastes are classified as "listed hazardous wastes" when discarded [22 CCR §66261.50]; if recycled as universal waste, these waste codes would not apply:

M001 Mercury-containing motor vehicle light switches and switches removed from motor vehicles

M002 Non-automotive mercury switches and any product that contains such switches

M003 Lamps that contain intentionally added mercury and products with lamps that contain intentionally added mercury

M004 Mercury-added novelties

N. REGULATORY EXCLUSIONS

Regulatory exclusions offered by the state of California may exempt the following wastes from some or all of the hazardous waste regulations. The exclusions apply if and only if all specified

conditions and requirements are met.

CAUTION: Read the pertinent regulations and statutes carefully.

WASTE STREAM	REQUIREMENTS (22 CCR §)
Excluded recyclable materials	25143.2, 25143.9
Agricultural use	66266.115
Elemental mercury	66266.120
Contaminated containers	66261.7
Scrap metal	66261.6(a)(3)(B)
Spent lead-acid batteries	66266.80
Recycled oil	25250.1
Used oil filters & fuel filters	66266.130 & 25250.22
Waste pesticides (farmers)	66262.70
Fluorescent light ballasts (PCBs)	67426.1
Non-automotive type batteries (universal wastes)	66261.9 & 66273.1
Lamps (universal wastes)	66261.9 & 66273.2
Thermostats (universal wastes)	66261.9 & 66273.4
Cathode ray tube materials (universal wastes)	66261.9 & 66273.6
Aerosol cans (universal wastes)	66261.9 & 25201.16
Mercury-containing items (automotive & non-automotive switches, dental amalgams, pressure or vacuum gauges, novelty items, counterweights & dampers, thermometers, dilators and weighted tubing, rubber flooring and gas flow regulators) (universal wastes)	66261.9 & 66273.4
Electronic devices	66261.9 & 66273.3
Silver (photographic/x-ray wastes)	25143.13
Waste-pulping liquors	25143.4
Treated wood waste	25143.1.5 & 67386.2
Petroleum-contaminated debris disposed of at a Class II landfill	25143.12
Biomass combustion ash & residues	25143.5
Oil-bearing materials recovered from refineries & related wastewater treatment systems	25144
Recyclable latex paint	25217.2

O. EXEMPTIONS FOR SPECIFIED SUBSTANCES [HSC §25141.5(B)(2)]

The following 23 specified substances are no longer hazardous wastes due solely to a failure to meet California's unique acute toxicity criteria. This list includes many low-hazard materials used in consumer goods (examples provided below).

- Acetic acid (vinegar)
- Aluminum chloride (used in deodorants)
- Ammonium bromide (used in textile finishing and as an anti-corrosive agent)
- Ammonium sulfate (used as a food additive and in fertilizer)
- Anisole (used in perfumes and food flavoring)
- Boric acid (used in eyewashes and heat-resistant glass)
- Calcium fluoride (used to fluoridate drinking water)
- Calcium formate (used in brewing and as a briquette binder)
- Calcium propionate (used as a food additive)
- Cesium chloride (used in brewing and in mineral waters)
- Magnesium chloride (used as a flocculating agent)
- Potassium chloride (used as a salt substitute and a food additive)
- Sodium bicarbonate (baking soda, used in antacids and mouthwashes)
- Sodium borate decahydrate (borax, used in laundry detergents)

- Sodium carbonate (soda ash, used in textile processing)
- Sodium chloride (table salt)
- Sodium iodide (used as an iodine supplement and in cloud seeding)
- Sodium tetraborate (borax, used in laundry detergents)
- The following oils: allspice oil, ceylon cinnamon oil, clarified slurry oil, dill oil, and lauryl leaf oil (used as food flavorings)

Limited types of solid metal-bearing wastes, which solely fail to meet the total toxicity limit concentrations (TTLCs) in DTSC regulations, are no longer hazardous wastes if they are managed for purposes of disposal in a Class I, Class II, or Class III landfill in California. Examples include metal-containing ceramics and coated metal objects [see amended HSC §25141.5(b)(3)].

P. UNIVERSAL WASTES

Universal wastes are lower-risk types of hazardous waste generated by a wide variety of businesses as well as individual households. The volume of universal waste generated by a business does not affect its generator status [HSC §25158.1]. While universal wastes exhibit hazardous waste characteristics, the wastes are regulated under less restrictive management standards. The primary goal of the universal waste rule is to divert the waste from non-hazardous municipal solid waste (garbage) landfills. Universal waste should typically be recycled. Some universal wastes are required to be recycled; otherwise, these must be managed in the same manner as other hazardous waste [management standards for these wastes are covered in a later section of this manual].

The following hazardous wastes are classified as universal wastes when managed in accordance with the standards for these wastes:

Batteries: Devices consisting of one or more electrically connected electrochemical cells that are designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, a cathode, and an electrolyte plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. This includes an intact, unbroken battery from which the electrolyte has been removed. This does not include automotive-type spent lead-acid batteries, batteries that are not yet waste, or batteries that do not exhibit a characteristic hazardous waste.

Electronic Devices: Any electronic device that is identified as a hazardous waste because it exhibits the characteristic of toxicity and/or is a listed hazardous waste. Examples of electronic devices include computer monitors, televisions, cash registers, radios, stereo equipment, calculators, and phones. Electronic devices do not include major appliances.

Mercury-Containing Equipment: This category includes thermostats, mercury switches, dental amalgam, pressure or vacuum gauges, mercury-added novelties, mercury counterweights and dampers, thermometers, dilators and weights, mercury-containing rubber flooring, and gas flow regulators.

Lamps: The bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infrared regions of the electromagnetic spectrum. Examples of common lamps include fluorescent, high-intensity discharge, neon, mercury-vapor, high-pressure sodium, and metal-halide lamps. The following lamps are not considered universal waste lamps:

- Lamps that are not yet waste
- Lamps that do not exhibit a hazardous characteristic
- Lamps that do not contain mercury

Cathode Ray Tubes (CRTs): Vacuum or picture tubes used to convert an electrical signal into a visual image.

CRT Glass: Any glass released or derived from the treatment or breakage of one or more CRTs or CRT devices and subsequently reclaimed at a CRT glass manufacturer or a primary or secondary lead smelter.

Aerosol Cans: Hazardous waste aerosol cans that are managed in accordance with the statute governing universal waste. Empty aerosol cans are not considered universal waste.

Conditionally exempt small quantity universal waste generators (CESQUWGs), as defined in 22 CCR §66273.9, produce no more than 100 kg of RCRA waste (including universal waste that

is federally regulated) and no more than 1 kg of acute hazardous waste in one calendar month. CESQUWGs are exempt from universal waste management requirements provided that:

- The generator does not dispose of the universal waste
- The universal waste is relinquished to another universal waste handler, a universal waste transporter (e.g., for curbside collection), a destination facility, or an authorized curbside household hazardous waste collection program
- The generator does not treat the universal waste

Q. SPECIAL WASTES

List of Special Wastes (Non-Inclusive) [22 CCR §66261.120]

The following are identified as special wastes under Title 22:

- Ash from burning of fossil fuels, biomass, and other combustible materials
- Auto shredder waste
- Baghouse and scrubber wastes from air pollution control
- Catalyst from petroleum refining and chemical plant processes
- Cement kiln dust
- Dewatered sludge from treatment of industrial process water
- Dewatered tannery sludge
- Drilling mud from drilling of gas and oil wells
- Refractory from industrial furnaces, kilns, and ovens
- Sand from sandblasting
- Sand from foundry casting
- Slag from coal gasification
- Sulfur dioxide scrubber waste from flue gas emission control in combustion of fossil fuels
- Tailings from the extraction, beneficiation, and processing of ores and minerals

Criteria & Requirements of a Special Waste [22 CCR §66261.122]

A special waste is a non-RCRA hazardous waste that:

- Is a solid, a water-based sludge, or a water-based slurry of which the solid constituents are substantially insoluble in water; OR
- Is a hazardous waste only because it:
  - » Contains a persistent or bioaccumulative substance exceeding its STLC or at a total concentration exceeding its TTLC
  - » Contains no persistent or bioaccumulative substance exceeding its TTLC in mg/kg for a solubilized and extractable concentration
  - » Contains no persistent or bioaccumulative inorganic substance exceeding its TTLC value in 22 CCR §66261.113(b)

NOTE: Lead at 350 mg/kg, copper at 2,500 mg/kg, and nickel at 2,000 mg/kg must be disposed of at a Class 1 facility unless a facility's waste discharge requirement (WDR) and solid waste facility permit allows it to take such waste. Generators should check with the disposal facility for acceptance requirements for special wastes.

Classification of a Waste as a Special Waste [22 CCR §66261.124]

A person who wishes to classify and manage a hazardous waste as a special waste can do so by submitting an application and obtaining prior written approval from DTSC.

Management of Special Wastes [22 CCR §66261.126]

A special waste may be disposed of at a landfill disposal facility that is not operated under a hazardous waste facility permit or an interim status document. However, the facility must meet the requirements of 22 CCR §66261.126.

RWQCBs generally regard special waste as a designated waste, requiring disposal of such waste only at a Class I or Class II facility.

R. DESIGNATED WASTES

Regulations administered by U.S. EPA and DTSC use detailed criteria to classify hazardous waste. In California there is a category of waste that lies near the lower boundary of hazardous waste and near the upper boundary of the "non-hazardous" waste category. This type of waste is not "hazardous" by regulation, but its presence in the environment is deemed a threat to water quality. This waste is classified as a *designated waste*. This category of waste is described only as the limit above which a waste could impair water quality at the site of discharge.

The Regional Water Quality Control Boards developed a methodology (referred to as the Designated Level Methodology) to define that boundary by establishing designated levels for specific constituents of a waste that provide site-specific indication for the potential of the waste to impair water quality. The figure "Waste and Unit Classifications Used in California" summarizes the waste classification schemes and the resulting selections of appropriate waste management units for the classified wastes.

Designated levels are calculated by first determining the bodies of water that may be affected by a waste and the present and probable future beneficial uses of these waters. Next, site-specific water quality goals are selected, based on backgroundwater quality or accepted criteria and standards, to protect those beneficial uses. Finally, these water quality goals are multiplied by factors that account for environmental attenuation and leachability. The result is a set of soluble and total designated levels that are applicable to a particular waste and disposal (or cleanup) site. Wastes having constituent concentrations in excess of these designated levels are presumed to pose a threat to water quality and are, therefore, classified as designated wastes. Such wastes must be managed at waste management units that isolate these wastes from the environment.

The potential leachate concentration from a waste is based on the STLC from the Waste Extraction Test (WET) or the concentration from a test that replaces the citrate buffer extract used in the STLC test with a deionized water extract. This extraction test is known as the DI-WET. Selection of which test to use is based on the environmental conditions where the designated level is being determined (e.g., a cleanup site subject only to rainfall would use the deionized extract). The concentration of the constituents extracted are then modeled to determine whether the leachate from that waste could reach underlying groundwater or nearby surface waters.

Commonly, a 100-fold attenuation factor is assumed to provide an average degree of natural protection. However, whenever site- and waste-specific data can be obtained, a more thorough analysis of environmental fate can be substituted for the generic attenuation-factor approach. Fate-and-transport models such as SESOIL are used; however, it is the responsibility of the generator / responsible party to provide this analysis.

If the predicted concentration of the constituent(s) reaching the water body exceeds water quality goals, the waste with the constituents at the reported concentration(s) is deemed to be a designated waste and must be managed accordingly. The water quality goal depends on the water body and may include maximum contaminant levels (MCLs), health advisory levels established by the Department of Health Services (DHS), appropriate cancer-risk levels, suggested no-adverse-response levels (SNARLs), and other water quality criteria and current and probable beneficial uses of the water. *A Compilation of Water Quality Goals*, published in 1990, lists these various water quality goals and can be obtained from the California Regional Water Quality Control Board, Central Valley Region. The appropriate RWQCB must be consulted to determine which water quality goals apply.

As a general rule, special wastes and any hazardous waste that has been reclassified as non-hazardous by DTSC is considered to be designated waste by the RWQCBs and must be managed off-site at a Class II facility.

The Designated Level Methodology for Waste Classification and Cleanup Determination, a staff report dated October 1986 and updated June 1989, can be obtained through the Central Valley RWQCB website: www.waterboards.ca.gov/centralvalley/.

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SECTION IV: CONTAINER & TANK MANAGEMENT REQUIREMENTS

A. CENTRAL ACCUMULATION AREAS

Each facility that generates hazardous waste must have an ID number (EPA or State, as applicable) and must have a Central Accumulation Area (CAA), commonly referred to as a 90-day (or 180-day) accumulation area, hazardous waste accumulation area, or accumulation area. The CAA must meet the following requirements:

Location & Design

The CAA should be located at least 50 feet from the property line—this requirement is mandatory for LQGs if ignitable (D001) or reactive (D003) wastes are present. Alternatives must comply with the California Code (CFC) or, if the property on which your business is established is not large enough to comply with this requirement, the matter should be resolved with your local regulator (CUPA).

When feasible, the CAA should be located on a continuous concrete (bermed) slab that has been coated with a sealant to prevent liquid penetration in the event of a hazardous waste spill. Containment systems for container accumulation areas are required for facilities operating under a TSDF permit, the details of which are specified in 22 CCR §66264.175. Section 5004 of the CFC also specifies conditions requiring secondary containment.

The CAA should be located as far as possible from drains or catch basins. Unless some form of secondary containment is provided, it should not be located in an area that may drain hazardous waste off the property.

Facilities must be maintained and operated to minimize the possibility of release, fire, or explosion.

Universal wastes are not required to be accumulated at a specified location, but handlers should designate a location where each type of universal waste or all universal wastes are accumulated on-site.

Security & Fencing

The CAA should be located within a secure area of the facility. Entry to the area is to be controlled.

Warning Signs

The CAA should have warning signs posted stating: **"DANGER HAZARDOUS WASTE ACCUMULATION AREA — UNAUTHORIZED PERSONNEL KEEP OUT."** While this is not a regulatory requirement if security provisions are met, it is a best management practice. The signs should be legible from 25 feet away and posted in sufficient quantity to be visible from any approach. Signs should be in English, Spanish, and any other language predominant to the location of the facility.

A **NO SMOKING** sign must be posted whenever there is a fire hazard posed by ignitable or reactive waste (fire code). Warning signs can be mounted on fence posts or stanchions or on walls behind the area. If flammable or combustible wastes are being accumulated, **FLAMMABLE** or **COMBUSTIBLE** warning signs must be posted. NFPA 704 signs are required on the outside of locations storing hazardous materials in quantities requiring a storage permit per CFC §105.6 (e.g., 200 ft^3 of flammable gas, 10 gallons of toxic liquid, > 25 gallons of Class II flammable liquids stored indoors).

Aisle Space

Wastes stored in the CAA must be accumulated in containers or tanks. The CAA must have sufficient aisle space to allow for inspection, rearranging, transferring containers, and responding to leaks or other emergencies.

Safety & Emergency Equipment

Depending on the types of wastes being handled at the facility, the following emergency equipment should be maintained at the CAA:

- Internal communication or alarm system
- Telephone or two-way radio capable of summoning emergency assistance
- Fire-control equipment (extinguishers of the type to handle the waste involved)
- Water at adequate volume and pressure to

supply water hose streams or sprinkler systems

- Shower/eyewash station
- Spill control equipment such as absorbent material and tools (e.g., shovels, etc.) for handling these wastes

This equipment must be tested and maintained. LQGs are required to develop an inspection schedule for this equipment and retain inspection records for three years.

Incompatible Material Storage

Incompatible hazardous wastes must be separated by distance, walls, berms, dikes, or other devices may be used. CFC §5003.9.8, separation of incompatible materials, reads as follows:

Incompatible materials in storage and storage of materials that are incompatible with materials in use are to be separated when the stored materials are in containers having a capacity of more than 5 lb (2 kg) or 0.5 gallon (2 L). Separation is to be accomplished by:

- Segregating incompatible materials in storage by a distance of not less than 20 feet
- Isolating incompatible materials in storage by a noncombustible partition extending not less than 18 inches (457 mm) above and to the sides of the stored material
- Storing liquid and solid materials in hazardous material storage cabinets
- Storing compressed gases in gas cabinets or exhausted enclosures in accordance with §5003.8.5 and §5003.8.6; materials that are incompatible are not to be stored within the same cabinet or exhausted enclosure

Accumulation Time Limits

Large Quantity Generators (LQGs)

The time limit for containers held by an LQG at the CAA is 90 days, unless an extension is obtained from DTSC for RCRA waste and from the CUPA for non-RCRA wastes. The 90-day extension can be exceeded for non-RCRA and exempted RCRA wastes under certain circumstances (e.g., disaster or other unforeseeable temporary circumstance).

Small Quantity Generators (SQGs)

An SQG can accumulate waste at the CAA for up to 180 days. If the waste is being transported off-site to a permitted facility located > 200 miles from the generator's facility, hazardous waste can be accumulated for an additional 90 days (or a maximum of 270 days). To retain eligibility for the 180- or 270-day accumulation time limits, the SQG is limited to a maximum of 6,000 kg of hazardous waste in the CAA at any one time. Acutely or extremely hazardous waste accumulated by an SQG in quantities > 1 kg cannot be accumulated for longer than 90 days. The 90-day time period begins on the day the first amount of waste is accumulated in a container or tank or on the day the quantity limit is reached at the workplace or Satellite Accumulation Area.

Very Small Quantity Generators (VSQG)

A VSQG can accumulate hazardous waste for an indefinite period of time until 100 kg of hazardous waste or 1 kg of acute/extremely hazardous waste has been reached. Once the quantity limits are reached, a VSQG has 90 days for acute/extremely hazardous waste (or the accumulation time limit applicable to SQGs for non-acute, non-extremely hazardous wastes) to transport the waste off-site.

B. CONTAINER MANAGEMENT

Labeling

Various labeling requirements apply to containers holding hazardous waste.

Each container of hazardous waste must have the following information (preferably on a properly filled out hazardous waste label):

- The words "Hazardous Waste"
- Generator's name
- Generator's address
- Composition and physical state of the waste; generally, a descriptive name and content of the waste (e.g., oily water) and whether the waste is a liquid, solid, or gas
- Hazardous properties of the waste (ignitable, corrosive, reactive, or toxic); commercially produced labels usually have these listed with a box that can be checked
- Accumulation start date, which is the date the

first drop of hazardous waste is placed into the container, or, if satellite accumulation is used, the date that the satellite quantity is reached; do not use the date the container was transferred to or brought to the CAA, unless it is the same date the satellite quantity limit was reached; additionally, if satellite accumulation is used, be aware that the generator must be able to show how long the container has been in the Satellite Accumulation Area (SAA)

Showing how long the container has been in the SAA can be achieved by marking the satellite accumulation start date either directly on the container or on a small label (other than the hazardous waste label).

All six required items must be entered on the label (or marked on the container) at the time any amount of hazardous waste begins to accumulate in the container. If the container is emptied by a waste recycler and reused to collect and store additional waste, it is best to use labels with "running" dates:

Enter the date the first amount of waste is placed into the container. Enter the date the container is emptied. Do not enter another start date until waste is again placed into the container.

Containers emptied daily can use the words "Emptied Daily" in the Accumulation Start Date field; this will preclude having to continually change labels. If "Emptied Daily" is used, the generator must ensure that the waste is emptied daily. If waste is removed from a container > 5 gallons, and the container will be reused, the container must be marked with the date emptied.

NOTE: Most inspectors allow "Pickup Date" to be used (if no new start date is noted) in lieu of the empty container labeling requirement.

In addition to the above labeling requirements, containers used to accumulate used oil must also be marked with "Used Oil."

Accumulation, Closure & Compatibility

Container Condition

While there is not a regulatory requirement for the use of DOT-authorized containers for the accumulation of hazardous waste (except for air emissions) [see "D. Hazardous Wastes from Non-Specific Sources"], DOT-authorized containers must be used for shipments. Containers must be in good condition with no signs of deterioration or leakage.

Container Closure

All containers holding hazardous waste must be kept closed except when wastes are being added to or removed from the container. Containers holding liquids and dispersible solids must also be kept airtight. LQGs accumulating liquids containing volatile organics at or above 500 ppm must use DOT-authorized containers and keep the containers closed and airtight. Otherwise, the LQG is subject to additional requirements under RCRA's Subpart CC Organic Vapor Emission Standards.

Waste Compatibility

Incompatible wastes must not be placed in the same container. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material. Rinsing or washing of containers requires an on-site treatment permit if the container capacity is > 5 gallons and if the rinsate is not reused on-site (e.g., used in a production process).

Weekly Inspections

Containers in the central or main CAAs must be inspected at least weekly for leaks, signs of deterioration, and floor condition. Containers should also be inspected for waste compatibility, labeling, and waste volume. A written record of these inspections should be maintained at the facility. A sample accumulation area inspection form is included at the end of this section. The inspection should include the following items:

- Date and time of the inspection
- Name of the individual performing the inspection
- Any problems observed
- Actions taken to fix these problems

The inspection log should be kept at or near the CAA and be presented to an agency inspector upon request.

C. TANKS

Tank means a stationary device designed to contain an accumulation of hazardous waste. Tanks are constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) and provide structural support. Under this definition, portable

tanks are managed as containers.

Labeling

Aboveground storage tanks used to store hazardous wastes, such as waste oil, must be appropriately labeled. The hazardous waste identification label must be located on the tank. Tanks must be labeled with the words "Hazardous Waste" and the accumulation start date.

When a tank is emptied, a marking, label, or sign indicating that the tank is empty must be posted on the tank. When empty storage tanks are reused, an accumulation start date showing the day that waste was again placed into the tank must be displayed.

Emergency Equipment

Unless it can be demonstrated that none of the wastes handled at a facility poses a hazard requiring such emergency equipment, tank accumulation areas must be equipped with the following:

- Internal communications or alarm system capable of providing immediate emergency instructions by voice or signal to facility personnel
- Telephone or two-way radio, immediately accessible at the scene, capable of summoning emergency assistance from outside the facility
- Portable fire extinguishers and other fire control equipment (including foam, inert gas, or dry chemical extinguishers as appropriate), spill control equipment, and decontamination equipment
- Firefighting water supply system at sufficient volume and pressure to supply fire hoses, foam equipment, automatic sprinklers, or a water spray system

The facility's emergency equipment must be regularly maintained and inspected to ensure proper operation. Although the regulations do not specify what constitutes regular maintenance and inspection, monthly intervals are recommended. A written record documenting equipment inspection and maintenance should be maintained.

Design & Installation [22 CCR §66265.192]

Tank systems / components foundations, structural support, seams, connections, and pressure controls (if applicable) must be designed to provide sufficient structural strength and be compatible with the waste(s). The system and components must be assessed and certified for use by an independent and qualified professional engineer registered in California in accordance with 22 CCR §66265.191 -192. Tank systems and components must also be:

- Inspected by a qualified individual before covering, enclosing, or placing a new tank system or component in use
- Supported and protected from corrosion
- Tested for tightness
- Supported and protected against physical damage and stress due to settlement, vibration, expansion, or contraction
- Provided with secondary contaminant and leak detection [22 CCR §66265.193]
- Managed airtight if holding volatile organics [40 CFR §264.1084-1085]

Secondary Containment For Tanks

All tanks operated by LQGs are required to have secondary containment that meet the requirements of 22 CCR §66265.193 unless they are exempted under 22 CCR §66265.193(f) or have been granted a variance under 22 CCR §66265.193(g).

Inspections

All tanks that store hazardous waste, including used oil, must be inspected once each operating day. The inspection must include:

- Checking the tank area immediately surrounding its accessible portions (including secondary containment structures, if present) for signs of corrosion, erosion, or releases
- Ensuring that overfill or spill control equipment, if present, is in working order
- Verifying data gathered from monitoring or leak detection equipment, if present, to ensure that the tank is operating according to design
- Checking the level in an uncovered tank to ensure adequate freeboard (minimum of two feet)

NOTE: Tanks holding hazardous waste with volatile organic compounds (VOCs) > 500 ppm must be covered and employ emission control devices.

A log must be kept to document each inspection for LQGs and should be maintained for SQGs. This must include the following information:

- Date and time of the inspection
- Name of the individual performing the inspection
- Any problems observed
- Actions taken to fix those problems

D. SATELLITE ACCUMULATION AREA REQUIREMENTS

Provided certain requirements are met, generators may temporarily accumulate small quantities of hazardous wastes at or near the place where wastes are generated. These areas are also referred to as *workplace accumulation areas*.

A facility is allotted one year to accumulate 55 gallons of hazardous waste or one quart of acutely or extremely hazardous waste. DTSC allows the quantity limit to be applied to separate waste streams being accumulated at a (non-laboratory) workplace location under certain conditions. These conditions generally apply when waste stream-mixing is unsafe or would prevent recycling.

There is no limit to the number of SAAs; however, each SAA must meet all of the following requirements to qualify:

- The waste must be accumulated only in containers (not tanks)
- The SAA must be under the control of the operator of the process that generates the waste
- The initial date of accumulation must be clearly marked on each container and visible for inspections
- Within three days after the quantity limit of 55 gallons (or one quart of acutely/extremely hazardous waste) is reached, the container(s) is transferred to the CAA (the CAA accumulation start date is the date the quantity limit was reached)
- The container must be clearly marked or labeled with the words "Hazardous Waste" and must be completely and legibly filled out using an indelible marker; in addition to the SAA and CAA start dates, markings and/or labels must show the generator's name and address, chemical composition (common name), physical state of the waste (e.g., solid, liquid, gas), and hazardous properties (e.g., toxic, corrosive, ignitable, reactive); note that the proper shipping name and the DOT identification number must be on the label if and when the container is to be shipped off-site
- The waste cannot be held on-site for more than one year from the initial date of accumulation or more than the allotted CAA time limit (e.g., 90 or 180 days), whichever occurs first; the combined time on-site (SAA plus CAA) cannot exceed one year
- The container that holds the waste must be in good condition (no excessive rusting or structural damage); if it is not in good condition or if it begins to leak, the waste must be transferred to a container that is in good condition
- The container must be made of or lined with material that will not react, and is otherwise compatible, with the hazardous waste stored
- The container holding the waste must be kept closed except when adding or removing waste
- All workplace accumulation containers should be inspected weekly for leaks, proper labeling, segregation of incompatibles, and volume and accumulation time limits; weekly inspections may be documented using the inspection log provided in the inspection section of this manual or a similar site-specific version, and a written inspection record (which includes the name of the inspector) should be maintained at the facility
- If wastes from multiple containers are transferred into a consolidation container at the CAA, the consolidation container must bear the oldest accumulation start date of the various wastes placed therein

E. UNIVERSAL WASTE

Labeling

Each container of universal waste must have the following information (preferably on a properly filled out universal waste label):

- The words "Universal Waste"

- Contents (e.g., Spent Batteries, Spent Lamps, etc.)
- Generator's address
- Accumulation start date, which is the date the universal waste is first placed into the container

Accumulation, Closure & Compatibility

Container Condition

Containers must be structurally sound and in good condition and have no signs of deterioration or leakage.

Container Closure

Containers holding universal waste must be kept closed except when wastes are being added to or removed from the container.

Accumulation Limits

Universal waste can be acumulated on-site for up to one year regardless of generator status.

Weekly Inspections

There are no inspection requirements for universal wastes, but if containers holding universal wastes are located with or near where hazardous wastes are accumulated, these containers should be inspected as part of the weekly hazardous waste inspection.

F. LABORATORY HAZARDOUS WASTE ACCUMULATION

HSC §25200.3.1 defines a *laboratory* as a workplace where relatively small quantities of hazardous chemicals are handled or used in a manner that meets the following criteria:

- Chemical reactions, transfers, and handling are carried out using containers that are designed to be easily and safely manipulated by one person
- Protective laboratory practices and equipment are available and in common use to minimize the potential for laboratory worker exposure to hazardous chemicals

The chemical procedures conducted in the laboratory must:

- Be conducted for purposes of education, research, chemical analysis, clinical testing, or product development, testing, or quality control
- Not be part of the actual commercial production of chemicals or other products, and not be part of production development activities, unless the activities are conducted on the scale of a research laboratory
- Not be part of the treatment of hazardous waste, other than the treatment of laboratory hazardous waste pursuant to HSC §25200.3.1(c)

Laboratory workers who generate hazardous waste may accumulate up to 55 gallons of hazardous waste (including extremely hazardous waste) or up to one quart of acutely RCRA hazardous waste in a Laboratory Accumulation Area (LAA). Unlike the SAA, the LAA does not have to be located at the initial accumulation point or be under the control of the operator of the process generating the waste. This exemption from standard SAA requirements applies as long as unsupervised access to the LAA is limited to trained personnel and incompatible wastes are prevented from being mixed together.[1] The laboratory must comply with all applicable RCRA hazardous waste management requirements.

G. CONTAMINATED CONTAINERS

Containers that are contaminated and managed pursuant to 22 CCR §66261.7 are exempt from regulation by this division and by HSC, Chapter 6.5, Division 20. However, they may still be hazardous waste.

Regarding the definition of *empty* for hazardous material, *pourable* means that no hazardous material/waste can be poured or drained from the container when inverted, and *not pourable* means that no hazardous material/waste remains in or on the container th"at can feasibly be removed by physical methods (a thin, uniform layer of dried material or powder is considered acceptable).

Container or inner liners removed from containers that have held a material listed as acute hazardous waste or extremely hazardous waste are empty if:

- Triple-rinsed using an appropriate solvent (an on-site treatment permit is required, except when managing the empty containers per

1. Incompatible wastes may be commingled for purposes of bench scale treatment, when done so in accordance with HSC §25200.3.1(c).

HSC §25143.2[c] or §25200.3.1[c]); OR

- Cleaned by another method with authorization from DTSC [22 CCR §66261.7(d)]

Empty containers must be managed by one of the following methods:

- Containers that are 5 gallons or less that meet California's definition of empty may be disposed at an appropriate solid waste facility provided that DOT requirements and the acceptance criteria of the solid waste facility are met
- Reclaiming the containers' scrap value on-site or shipping the containers to a person who reclaims their scrap value, provided they are packaged and transported properly
- Reconditioning or remanufacturing the containers on-site and for subsequent reuse
- In lieu of managing the containers by the above methods, the owner/operator may ship the containers to a supplier or to another intermediate collection location, provided that the containers are packaged and transported properly [22 CCR §66261.7(e)]

Containers larger than 5 gallons that are managed with one of the above methods are to be marked with the date they have been emptied and are to be managed within one year of being emptied. [22 CCR §66261.7(f)]

Empty containers larger than a 5-gallon capacity that did not contain an acutely or extremely hazardous waste may be managed by:

- Reclaiming their scrap value on-site or shipping the containers or inner liners to a person who reclaims their scrap value pursuant to DOT regulations;
- Reconditioning or remanufacturing the containers or inner liners on-site pursuant to DOT regulations; OR
- Shipping the containers or inner liners to a supplier or to another intermediate collection location for accumulation prior to managing the containers or inner liners by reclaiming their scrap value or reconditioning or remanufacturing the containers (all must be done pursuant to DOT regulations)

Any person who generates contaminated "empty" containers or inner liners larger than 5 gallons that previously held a hazardous material is to maintain the name, street address, mailing address, and telephone number of the owner/operator of the facility to which the empty containers were shipped. This information is to be retained on-site for a minimum of three years. [22 CCR §66261.7(g)]

Uncontaminated containers, where inner liners have prevented contact with the inner surface of the containers, are not subject to regulation as hazardous waste. [22 CCR §66261.7(h)]

Containers or inner liners that previously held a hazardous material that are sent back to the supplier for the purpose of being refilled are exempt from regulation, provided all the following requirements are met:

- Containers or inner liners were last used to hold hazardous material acquired from the supplier
- Containers or inner liners are empty
- Containers or inner liners are returned to supplier for purposes of being refilled
- Containers or inner liners are not treated prior to being returned to the supplier, except as authorized
- Containers are not treated by the supplier without obtaining specific authorization
- Containers or inner liners are refilled with compatible hazardous material [22 CCR §66261.7(I)]

Contaminated household hazardous material and pesticide containers of five gallons or less are exempt. [22 CCR §66261.7(k)]

Compressed gas cylinders are exempt when the pressure in the container approaches atmospheric pressure. [22 CCR §66261.7(l)]

Aerosol containers that did not hold an acutely or extremely hazardous waste are exempt when the cans are emptied of their contents and propellant to the maximum extent practicable under normal use (non-empty aerosol cans may be managed as universal waste). [HSC §25201.16]

Containers made of absorptive material are not exempt if the containers were in direct contact with and have absorbed a hazardous material. [22 CCR §66261.7(n)]

The following items are not containers:

- Used oil filters
- PCB-contaminated electrical equipment
- Chemotherapy drug intravenous bags or tubing [22 CCR §66261.7(o)]

Any containers or inner liners that previously held a hazardous material and that are not empty or otherwise exempt from regulation are to be managed as hazardous waste.

H. AUTOMOTIVE BATTERIES & DRAINED USED OIL & FUEL FILTERS

These have accumulation time limits associated with the following on-site quantities:

- If less than one ton could be present on-site at any one time, the accumulation time limit is one year
- If greater than one ton could be present on-site at any one time, the accumulation time limit is 180 days

WEEKLY ACCUMULATION AREA INSPECTION LOG

Location: _____

Volume of HW stored: _____ Total number of containers: _____

Name of inspector: _____ Date: _____ Time: _____

	YES	NO
1. Are there any unknown HW containers?		
2. Are there any corroded (rusty) containers?		
3. Are there any deteriorated HW containers?		
4. Are there any bulging HW containers?		
5. Are there any dented HW containers?		
6. Are there any open HW containers that are not in use?		
7. Are there HW containers containing liquids or dispersible solids that are not airtight?		
8. Are there HW containers with VOCs requiring air emission controls?		
9. Are there any leaking or overfilled HW containers?		
10. Is there staining or spillage in areas near HW containers?		
11. Are HW containers missing information on labels?		
• Words "Hazardous Waste"		
• Chemical composition (no trade names or abbreviations) / contents		
• Generator name and address		
• Physical state of waste (e.g., solid, liquid)		
• Hazardous properties (e.g., flammable, corrosive, reactive, toxic)		
• Accumulation start date		
12. Are there any HW containers stored incompatibly?		
13. Are HW containers incompatible with contents?		
14. Are HW containers stored in rows with inadequate aisle space?		
15. Are flammable/reactive HW containers stored less than 50 feet from property line?		
16. Are HW containers packaged in non-DOT-approved or otherwise inappropriate containers?		
17. Are empty containers > 5 gallons missing the "date emptied" marking?		
18. Are HW containers stored more than 90 days (180 days for SQGs)?		
19. Are containers of recyclable materials incorrectly labeled (not labeled "Excluded Recyclable Materials," all other labeling information)?		
20. Were leaking or deteriorated HW containers present?		

Describe any observations for items checked **Yes**: _____

_____

_____

_____

Due date: _____ Person assigned: _____

Follow-up date: _____ Completed by: _____

DAILY TANK INSPECTION CHECKLIST

Tank: _____ Location: _____
Volume of HW stored: _____ Waste streams: _____
Name of inspector: _____ Date: _____ Time: _____

	YES	NO
1. Are there signs of corrosion or leakage?		
• Tank exterior		
• Inlet piping/valves/connections		
• Outlet piping/valves/connections		
2. Are there defective equipment components?		
• Inlet valves and connections		
• Outlet valves and connections		
• High-level waste feed cutoff		
• Leak detection system		
3. Is secondary containment cracked or deteriorated?		
4. Does the secondary containment hold accumulated liquids?		
5. Is tank properly labeled?		
• Words "Hazardous Waste"		
• Date of accumulation		
6. Is HW in tank incompatible with tank material?		
7. Is HW stored in tanks more than 90 days (180 days for SQGs) from the date of accumulation?		
8. Is there less than 2 feet of freeboard in open tanks?		
9. Are there pumps or values associated with volatile organic compounds that are not vapor-tight?		

Describe any observations for items checked **Yes**: _____

Corrective action required: _____

Due date: _____ Person assigned: _____
Follow-up date: _____ Completed by: _____

TECHNOTE: POTENTIALLY INCOMPATIBLE WASTES*		
GROUP 1-A	**GROUP 1-B**	**POTENTIAL CONSEQUENCES**
• Acetylene sludge • Alkaline caustic liquids • Alkaline cleaner • Alkaline corrosive liquids • Alkaline corrosive battery fluid • Caustic wastewater • Lime wastewater • Spent caustic • Lime sludge • Pickling liquor and other corrosive alkalis	• Acid sludge • Spent sulfuric acid • Battery acid • Acidic chemical cleaners • Electrolyte, acid • Acid and water • Spent mixed acid • Spent acid • Etching acid liquid or solvent	*Heat generation* *Violent reaction*
GROUP 2-A	**GROUP 2-B**	
• Aluminum • Beryllium • Calcium • Lithium • Other reactive metals and metal hydrides • Zinc powder • Sodium • Potassium • Magnesium	• Any waste in Group 1-A or 1-B	*Fire* *Explosion* *Generation of flammable hydrogen gas*
GROUP 3-A	**GROUP 3-B**	
• Alcohols	• Calcium • Potassium • Other water-reactive waste • Lithium • Metal hydrides • SO_2Cl_2 (sulfuryl chloride), $SOCl_2$ (thionyl chloride), PCl_3 (phosphorus trichloride), CH_3SiCl_3 (trimethyl-trichlorosilane) • Any concentrated waste in Group 1-A or 1-B	*Fire* *Explosion* *Heat generation* *Generation of flammable or toxic gases*
GROUP 4-A	**GROUP 4-B**	
• Alcohols • Nitrated hydrocarbons • Unsaturated hydrocarbons • Aldehydes • Halogenated hydrocarbons • Other reactive organic compounds and solvents	• Concentrated Group 1-A or 1-B • Group 2 Wastes	*Fire* *Explosion* *Generation of flammable or toxic gases*
GROUP 5-A	**GROUP 5-B**	*Generation of toxic hydrogen cyanide* *Generation of hydrogen sulfide gas*
• Spent cyanide and sulfide solutions	• Group 1-B wastes	
GROUP 6-A	**GROUP 6-B**	
• Chlorates • Chlorine • Chlorites • Chromic acid • Hypochlorites • Nitric acid, fuming • Perchlorates • Permanganates • Peroxides • Nitrates • Other strong oxidizers	• Acetic acid and other organic acids • Group 2-A wastes • Group 4-A wastes • Concentrated mineral acids • Other flammable and combustible wastes	*Fire* *Explosion* *Violent reaction*
* Mixing a Group A material with a Group B material may have the listed consequences..		

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SECTION V: HAZARDOUS WASTE SHIPPING REQUIREMENTS

A. DOT & U.S. EPA RELATIONSHIP OVERVIEW

Federal hazardous wastes represent a portion of the hazardous material universe governed by DOT. Several areas exist in which regulatory requirements from federal agencies such as OSHA, DOT, and U.S. EPA overlap. Practically all of the hazardous materials regulated by DOT are regulated as hazardous material by Federal OSHA via the Hazard Communication Standard; however, the reverse is not true: not all of those chemicals regulated by OSHA are also regulated as hazardous materials by DOT. Furthermore, hazardous waste can be placed into two broad categories: federal (RCRA) and state (non-RCRA) regulated hazardous wastes. The manifest requirements in California apply to both with some exceptions as previously noted (i.e., universal wastes and certain recyclable materials).

B. TRANSPORTATION REQUIREMENTS FOR HAZARDOUS WASTE GENERATORS

Generators are required to track shipments of hazardous wastes from the time they leave the facility to the time they arrive at the designated permitted TSDF. The waste must be shipped using a special shipping paper that has information required by U.S. EPA and DOT. This shipping paper is known as a Uniform Hazardous Waste Manifest (manifest). These manifests are used to transport both federal (RCRA) or state-designated (non-RCRA) hazardous waste.

On September 5, 2006, the manifest (EPA form 8700-22 and 8700-22A) replaced all state manifest versions. U.S. EPA's e-Manifest system was implemented on June 30, 2018; however, generators can still use the paper manifest (forms 8700-22 and 8700-22A).

While many manifests are completed by the contractor who is doing the hauling, it remains the generator's responsibility to ensure that the document was correctly and completely filled out.

Ultimately, generators are responsible for properly preparing their hazardous wastes for off-site shipment.

These requirements include but are not limited to the following:

- United Nations (UN) DOT-authorized shipping containers must be used to transport all RCRA hazardous waste & some non-RCRA hazardous wastes
- Containers must be labeled with hazardous waste labels
- Manifest procedures must be followed
- Land disposal restrictions (LDR) forms must accompany selected waste shipments or previously be on file at the receiving TSDF
- Generators must ensure that any vehicles transporting hazardous wastes from their facility have proper placards (where applicable) and certifications and that the drivers have the appropriate license endorsements

Waste may be transported to a permitted TSDF only by transporters who possess a valid EPA identification number and are registered as hazardous waste haulers with DTSC. Current hauler registration is demonstrated by having a certificate of inspection on board the vehicle. If there is any question, each facility should request that the driver show a current certificate of inspection before the waste is loaded onto the truck.

SB 1257, which went into effect on January 1, 2003, requires generators to verify the driver has the correct class of driver's license, including applicable endorsement. [HSC §25160.7]

Additionally:

- Vehicles transporting hazardous materials or hazardous wastes that are required to use placards must be equipped with a working two-way communication device so that drivers can call for assistance in an emergency; a two-way radio or cellular phone would meet this requirement [Vehicle Code 32001(c)(4)]
- Enclosed cargo bodies must remain locked except during loading and unloading; this requirement does not apply to a tank or flatbed vehicle [Vehicle Code 32001(c)(5)(A)]

C. UNIFORM HAZARDOUS WASTE MANIFEST SYSTEM

Hazardous waste shipments are tracked using the Uniform Hazardous Waste Manifest. The manifest has several imprint copies, with each copy having a specific use or purpose. The manifest includes the original and five copies.

Original (Copy #1)

Accompanies the waste from the time it leaves the site until it reaches the designated TSDF. It contains all of the required shipping information and has the signatures of all parties that handled the waste during the shipment process. The original manifest is submitted to U.S. EPA's e-Manifest system by the TSDF within 30 days from the date it accepts the waste (DTSC for waste shipped to California).

Copy #2

Stays with the original and waste shipment until it reaches the TSDF. It will have signatures of the generator, the transporter(s), and the TSDF. This is commonly referred to as the TSDF-signed or facility copy. The TSDF returns this copy to the generator after it accepts the waste. It serves as a receipt, documenting that the waste arrived at the designated TSDF and that the TSDF accepted the waste. This copy must be retained for a minimum of three years.

Copy #3

Stays with the original and waste shipment until it reaches the TSDF. It will have the signatures of the generator, the transporter(s), and the TSDF. This is the TSDF's copy of the manifest.

Copy #4

Stays with the waste until it reaches the TSDF. It will have signatures of the generator, the transporter(s), and the TSDF. This copy is retained by the transporter(s), verifying the waste was transferred to the TSDF by the transporter of the waste.

Copy #5

Is a duplicate of the original, but only has the signatures of the generator and transporter. The generator is responsible for sending a legible copy to DTSC within 30 days of shipment. Since Copy #6 is often illegible, it is recommended that a copy be made of Page #1 once the signatures of the generator and transporter have been obtained.

The following are key points to the manifest system of which generators should be aware.

The generator is responsible for completing the manifest. While most TSDFs or transporters complete the manifest as a service to their customers, the generator is responsible for the accuracy of the information entered thereon. By signing the manifest, the generator certifies that the contents of this consignment are fully and accurately described by the proper shipping name, are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. Generators must also ensure that the number and types of containers loaded on the vehicle are correct.[1] Any changes or corrections made to the manifest must be initialed.

RCRA hazardous waste and some non-RCRA waste are subject to DOT requirements, and, as such, anyone who packages the hazardous waste or who offers that waste for shipment (i.e., signs the manifest) is classified as a DOT "hazmat employee." Proper training and awareness of DOT requirements, as well as function-specific training (i.e., manifest training), is required under 49 CFR [see DOT training requirements, discussed earlier in this section].

There may be more than one transporter of your waste. Some waste shipments are temporarily held at transfer stations for up to ten days (depending on zoning requirements) to consolidate loads prior to shipment to the TSDF. The length of time it took for the waste to arrive at the TSDF is a good indicator of whether a transfer station was used. This is a routine industry practice; however, it is prudent for generators to inquire whether the waste will be transferred.

The TSDF designated on the manifest may not be the ultimate destination of your waste. TSDFs may consolidate and/or bulk waste shipments at a permitted transfer or storage facility. Although the TSDF becomes accountable for the waste after it accepts your waste (i.e., also becomes the generator of the bulked waste), your responsibility for the waste does not end. The transfer of responsibility for the waste to the TSDF is only as good as the financial capability of the TSDF to assume that responsibility. A TSDF usually bulks waste when it is being sent out of state for final destruction. If you are incinerating

1. A Discrepancy Report must be submitted to DTSC if discrepancies involving > 10% quantity or a one-piece count cannot be reconciled between the TSDF and the generator within 15 days.

your waste and the TSDF you designate on your manifest is not the ultimate destination of that waste, obtain a Certification of Destruction from whom you have contracted to handle your waste. The certificate you receive should be retained with the manifest that accompanied the waste from your facility. The certificate should reference the original waste manifest number.

The same applies to waste that is ultimately recycled. Obtain a Certificate of Recycling, when applicable. It could take up to two years before the waste is incinerated (up to one year at the permitted storage facility and another year at the incineration facility). Typically, the certificate can be obtained within a few months.

Non-RCRA (California-only) hazardous waste shipped out of state, where the waste is classified as non-hazardous, must be manifested and transported by a licensed hazardous waste hauler while being transported in the state of California. The generator must request the disposal site's signature and obtain a copy of the signed manifest from either the transporter or the disposal site. Many out-of-state disposal facilities may not be willing to sign a manifest or any document that states the waste they are taking is hazardous if it is not considered hazardous in their state. However, California requires a signature from the receiving facility. Send a copy of that receipt attached to a copy of the original or generator copy of the manifest to DTSC to demonstrate the waste reached the facility designated on the manifest.

DTSC manifest correction fee: The manifest is used to track shipments of hazardous waste from the generator to the disposal or treatment facility to ensure safe handling and proper disposal of the waste. Because many of the manifests that are submitted to the Department of Toxic Substances Control (DTSC) contain errors, DTSC is authorized to charge a fee of $20.00 per manifest for correcting any errors [HSC §25160.5]. This fee can apply to any single manifest and is usually going to be charged to the generator who is legally responsible for the accuracy of the information on the manifest. If the error is significant enough or if there is a pattern of repeated errors, DTSC or the CUPA can take more formal enforcement actions in addition to this fee.

The following information provides tips and guidelines designed to help generators or transporters improve manifest accuracy, save time correcting errors, and avoid fees or enforcement action.

Completeness: Before signing a manifest, review it for completeness. A common error is forgetting to fill out the number and type of containers as well as the unit quantity (i.e., pounds, yards, tons, etc.).

Accuracy: When identifying the volume of waste, the most accurate unit of measure is pounds or tons. DTSC ultimately converts all other units, such as yards or gallons, into tons using general conversion for solids and liquids. This could result in higher taxes or generator fees if less accurate units are used. An example would be shipping more lightweight items such as personal protective equipment or asbestos in gallon volumes.

Deleting waste line items: If waste stream information is typed or pre-printed on the manifest and will not be shipped, draw a single line through all applicable fields for that waste including any related items noted in box 14. It is also recommended that the individual signing the manifest initial the lined-out information or any other correction.

Check transporter information: Confirm that company names, EPA ID numbers, and phone numbers are correct. Ideally, the transporter's name, identified on the manifest, should also be displayed on the side of the transport vehicle.

Check generator information: Confirm that the company name, EPA ID numbers, and phone numbers are all correct. If the EPA ID number begins with CAC or CAP, it is only a temporary number (valid for 90 days).

Signatures and dates: Make certain that handwritten signatures are obtained from the generator and transporter at the time the shipment is picked up. The names of the individuals signing the manifest must also be legibly printed or typed next to the signature.

Only one line per transporter: Each company that transports hazardous waste on a manifest should be listed only once and should sign the manifest only once. If a different driver takes over the load but works for the same company as the first driver, no additional signatures are required. Additional transporter information and signatures are only required when a different company takes responsibility for the shipment.

Manifest correction fees: Generally, DTSC does not charge the allowable $20.00 manifest correction fee if the company files a correction letter before

DTSC sends a letter requesting corrections.

Manifest corrections: Most manifest errors can be corrected by sending DTSC a correction letter for each manifest. Correction letters should be sent to Generator Information Services Section, P.O. Box 806, Sacramento, CA 95812-0806. Correction letters should be submitted on company letterhead and include the following information:

- Manifest tracking number
- Shipment date (when the generator signed the manifest)
- Generator's EPA ID number used on the manifest
- The incorrect or incomplete item number
- The corrected information
- Signature, title, mailing address, and phone number of the individual submitting the correction letter

Manifest Completion Instructions

Box #1: Generator ID Number

Enter the generator's 12-digit EPA identification number.

Box #2: Page 1 of

Enter the total number of pages used to complete the manifest (i.e., the first page [EPA Form 8700-22] plus the number of continuation sheets [EPA Form 8700-22A], if any).

Box #3: Emergency Response Phone

The emergency response phone number must be the number of the generator or an agency that is capable of accepting and will accept responsibility for providing detailed information about the shipment; monitored 24 hours a day by someone who is knowledgeable of the waste being shipped and can provide emergency response and spill cleanup information.

Box #4: Manifest Tracking Number

This unique tracking number will be pre-printed on the manifest form. The tracking number must also be included on the label on all non-bulk hazardous waste containers (≤ 119 gallons).

Box #5: Generator's Name and Mailing Address

Enter the name of the generator, the mailing address to which the completed manifest signed by the designated facility should be mailed, and the generator's telephone number. Enter the physical site address from which the shipment originates only if this address is different than the mailing address.

Box #6: Transporter 1 Company Name and U.S. EPA ID Number

Enter the company name of the first transporter who will transport the waste. Vehicle, driver, company phone, or address may not be entered here.

Box #7: Transporter 2 Company Name and U.S. EPA ID Number

If applicable, enter the company name of the second transporter who will transport the waste. If more than two transporters are used to transport the waste, use a continuation sheet(s) (EPA Form 8700-22A) and list the transporters in the order in which they will be transporting the waste.

Box #8: Designated Facility Name and Site Address

Enter the company name and site address of the facility designated to receive the waste listed on the manifest. Also enter the facility's phone number and the EPA ID number of the facility.

Box #9a: HM

If the wastes identified in box #9b consist of both hazardous and non-hazardous waste, then identify the hazardous materials by entering an X in box #9a next to the corresponding hazardous waste identified in box #9b.

Box #9b: U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))

This box is for the DOT description, which includes the proper shipping name, hazard class, ID number (UN/NA), and packing group (if any) for each RCRA hazardous waste as identified in 49 CFR Parts 171 through 177. Non-RCRA hazardous wastes that are not subject to DOT shipping requirements must be described by indicating a generic name of the waste and the phrase "Non-RCRA Hazardous Waste, Solid" or "Non-RCRA Hazardous Waste, Liquid" for solid or liquid wastes, respectively.

Box #10: Containers (No./Type)

Enter the number of containers for each waste and the appropriate abbreviation from Table I (below) for the type of container.

TABLE I	
TYPES OF CONTAINERS	
BA	Burlap, cloth, paper, or plastic bags
CF	Fiber or plastic boxes, cartons, or cases
CM	Metal boxes, cartons, cases (including roll-offs)
CW	Wooden boxes, cartons, or cases
CY	Cylinders
DF	Fiberboard or plastic drums, barrels, or kegs
DM	Metal drums, barrels, or kegs
DT	Dump truck
DW	Wooden drums, barrels, or kegs
HG	Hopper or gondola cars
TC	Tank cars
TP	Portable tanks
TT	Cargo tanks (tank trucks)

Box #11: Total Quantity

Round partial units to the nearest whole unit, and do not enter decimals or fractions.

Box #12: Unit Wt./Vol.

Enter the appropriate abbreviation from Table II (below) for the unit of measure.

TABLE II	
UNITS OF MEASURE	
G	Gallons (liquids only)
K	Kilograms
L	Liters (liquids only)
M	Metric tons (1,000 kilograms)
N	Cubic meters
P	Pounds
T	Tons (2,000 pounds)
Y	Cubic yards

Box #13: Waste Codes

Enter up to five federal (RCRA) waste codes and one California state waste code to describe each waste stream identified in box #9b.

Box #14: Special Handling Instructions and Additional Information

Generators may enter any special handling or shipment-specific information necessary for the proper management or tracking of the waste, such as waste profile numbers, container codes, bar codes, or response guide numbers. Generators also may use this space to enter additional descriptive information about their shipped materials, such as chemical names, constituent percentages, physical state, or specific gravity of wastes identified with volume units in box #12.

This space may be used to record limited types of federally required information for which there is no specific space provided on the manifest, including:

- Any alternate facility designations
- The manifest tracking number of the original manifest for rejected wastes and residues that are re-shipped under a second manifest
- The specification of PCB waste descriptions and PCB out-of-service dates

Generators, however, cannot be required to enter information in this space to meet regulatory requirements.

Box #15: Generator's/Offeror's Certification

The generator is to read, sign (by hand), and date the certification statement. If a mode other than highway is used, the word "highway" should be lined out and the appropriate mode (rail, water, or air) inserted in the space below. If another mode in addition to the highway mode is used, enter the appropriate additional mode (e.g., "and rail") in the space below. Primary exporters shipping RCRA hazardous waste to a facility located outside of the United States must add "On behalf of" to the end of the first sentence of the certification in the signature block or may hand-write this statement in the signature block prior to signing the generator certifications. All of the above information, except the handwritten signature required in box #15, may be preprinted.

In signing the waste minimization certification statement, large quantity generators are certifying that they have a program in place to reduce the

volume and toxicity of waste generated to the degree they have determined to be economically practicable and that they have selected the practicable method of treatment, storage, and disposal currently available to them that minimizes the present and future threat to human health and the environment. Small quantity generators are certifying that they have made a good faith effort to minimize their waste generation and have selected the best waste management method that is available to them and that they can afford.

Box #16: International Shipments

For export shipments, the primary exporter must check the export box and enter the point of exit (city and state) from the United States. For import shipments, the importer must check the import box and enter the point of entry (city and state) into the United States. For exports, the transporter must sign and date the manifest to indicate the date the shipment left the United States. Transporters of hazardous waste shipments must deliver a copy of the manifest to U.S. Customs and Border Protection when exporting the waste across U.S. borders.

Box #17: Transporter Acknowledgment of Receipt of Materials

Enter the name of the person accepting the waste on behalf of the first transporter. Only one signature per transportation company is required. Signatures are not required to track the movement of wastes in and out of transfer facilities unless there is a change of custody between transporters.

Transporters carrying imports, and acting as importers, may have responsibilities to enter information in the International Shipments box. Transporters carrying exports may also have responsibilities to enter information in the International Shipments box [see above instructions for box #16].

Box #18a: Discrepancy Indication Space

The authorized representative of the designated (or alternate) facility must note in this space any discrepancies between the waste described on the manifest and the waste actually received at the facility. Manifest discrepancies are:

- Significant differences between the quantity or type of hazardous waste designated on the manifest or shipping paper and the quantity and type of hazardous waste a facility actually receives
- Rejected wastes, which may be a full or partial shipment of hazardous waste that the TSDF cannot accept
- Container residues, which are residues that exceed the quantity limits for empty containers set forth in 40 CFR §261.7(b)

For rejected loads and residues [40 CFR §264.72(d-f) or 40 CFR §265.72(d-f)], check the appropriate box if the shipment is a rejected load (i.e., rejected by the designated and/or alternate facility and sent to an alternate facility or returned to the generator) or a regulated residue that cannot be removed from a container. Enter the reason for the rejection or the inability to remove the residue and a description of the waste. Also, reference the manifest tracking number for any additional manifests being used to track the rejected waste or residue shipment on the original manifest. Indicate the original manifest tracking number in box #14, Special Handling Instructions and Additional Information, of the additional manifests.

Owners or operators of facilities located in unauthorized states (i.e., states in which U.S. EPA administers the hazardous waste management program) who cannot resolve significant differences in quantity or type within 15 days of receiving the waste must submit to their Regional Administrator a letter with a copy of the manifest at issue describing the discrepancy and attempts to reconcile it [40 CFR §264.72(c) and §265.72(c)].

Owners or operators of facilities located in authorized states (i.e., those states that have received authorization from U.S. EPA to administer the hazardous waste management program) should contact their state agency for information on where to report discrepancies involving "significant differences" to state officials.

Box #18b: Alternate Facility (or Generator)

Enter the name, address, phone number, and EPA identification number of the alternate facility that the rejecting TSDF has designated, after consulting with the generators, to receive a fully rejected waste shipment. In the event that a fully rejected shipment is being returned to the generator, the rejecting TSDF may enter the generator's site information in this space. This field is not to be used to forward partially rejected loads of residue waste shipments.

Box #18c: Signature of Alternate Facility (or Generator)

The authorized representative of the alternate facility (or the generator in the event of a returned shipment) must sign and date this field of the form to acknowledge receipt of the fully rejected wastes or residues identified by the initial TSDF.

Box #19: Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

Enter the most appropriate hazardous waste report management method code for each waste listed in box #9. The hazardous waste report management method code is to be entered by the first TSDF that receives the waste and is the code that best describes the way in which the waste is to be managed when received by the TSDF.

Box #20: Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Enter the name of the person receiving the waste on behalf of the owner or operator of the facility. That person must acknowledge receipt or rejection of the waste described on the manifest by signing and entering the date of receipt or rejection where indicated. Since the facility certification acknowledges receipt of the waste, except as noted in box #18a, Discrepancy Indication Space, the certification should be signed for both waste receipt and waste rejection, with the rejection being noted and described in the space provided in box #18a. Fully rejected wastes may be forwarded or returned using box #18b after consultation with the generator. Enter the name of the person accepting the waste on behalf of the owner or operator of the alternate facility or the original generator. That person must acknowledge receipt or rejection of the waste described on the manifest by signing and entering the date the waste in box #18c was received or rejected. Partially rejected wastes and residues must be re-shipped under a new manifest, which is to be initiated and signed by the rejecting TSDF as offeror of the shipment.

Continuation Sheet, U.S. EPA Form 8700-22A

Read all instructions before completing this form.

This form is to be used as a continuation sheet to U.S. EPA Form 8700-22 if:

- More than two transporters are to be used to transport the waste
- More space is required for the DOT description and related information in box #9 of U.S. EPA Form 8700-22

Box #21: Generator's ID Number

Enter the generator's 12-digit EPA identification number.

Box #22: Page

Enter the page number of the continuation sheet.

Box #23: Manifest Tracking Number

Enter the manifest tracking number from box #4 of the manifest form to which the continuation sheet is attached.

Box #24: Generator's Name

Enter the generator's name as it appears in box #5 on the first page of the manifest.

Box #25: Transporter _____ Company Name and U.S. EPA ID Number

If additional transporters are used to transport the waste described on the manifest, enter the company name of each additional transporter in the order in which they will transport the waste in the lined space after "Transporter" in this box and in box #26, if necessary. For example: Transporter 3 Company Name, followed by the name of that transporter. Also enter the 12-digit EPA identification number. Each continuation sheet can record the names of two additional transporters.

Box #26: Transporter _____ Company Name and U.S. EPA ID Number

See box #25 above.

Boxes #27a – #32

Refer to U.S. EPA Form 8700-22 boxes #9a – #14, respectively.

Box #33: Transporter _____ Acknowledgment of Receipt of Materials

Enter the number of the transporter as identified in box #25 and the name of the person accepting the waste on behalf of the transporter (company name) identified in box #25. That person must acknowledge acceptance of the waste described on the manifest by signing and entering the date of receipt.

Box #34: Transporter _____ Acknowledgment of Receipt of Materials

If applicable, repeat instructions for box #33 (corresponding to information entered in box #26).

Box #35: Discrepancy

Refer to box #18a. This space may be used to more fully describe information on discrepancies identified in box #18a of the manifest form.

Box #36: Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

For each field in this box, enter the sequential number that corresponds to the waste materials described under box #27b, and enter the appropriate process code that describes how the materials will be processed when received. If additional continuation sheets are attached, continue numbering the waste materials and process code fields sequentially, and enter on each sheet the process codes corresponding to the waste materials identified on that sheet.

D. CONSOLIDATED MANIFESTING

Consolidated manifesting merges the former modified manifesting statutes [HSC §25250.8] and "milkrun" regulations [22 CCR §66263.42]. It allows certain registered hazardous waste transporters to combine specified wastes from multiple eligible generators on a single manifest rather than using a separate manifest for each generator. Generators using the consolidated manifesting system are exempt from filling out a hazardous waste manifest when disposing of certain wastes. Like the former modified manifesting process, the consolidated transporter completes both the generator and transporter sections of the manifest. Consolidated manifesting does not authorize the transporter to commingle the different types of wastes eligible under the procedures into the same tank or container, but it does allow the transporter to commingle the same type of waste from different waste producers.

Generators are still responsible for their waste from "cradle to grave" and are not exempt from properly characterizing, handling, labeling, managing, and accumulating hazardous waste eligible under the consolidating manifesting procedures.

Generator Eligibility

All SQGs can use the consolidated manifesting procedures for any of the eligible waste streams. LQGs may use the consolidated manifesting procedures for used oil and contents of oil/water separators. If an LQG would qualify as an SQG when deducting the volume of used oil and/or contents of oil/water separators, then that generator may use the consolidated manifesting procedures for all eligible waste streams.

This does not change the generator status. LQGs still remain as such, and the deductions of the used oil and oil/water separator volumes are solely for the purpose of determining whether they are eligible to use the consolidated manifesting procedures for other eligible waste streams.

Eligible Waste Streams

The consolidated manifesting procedure may be used only for the following waste streams [HSC §25160.2 (c)]:

- Used oil
- Contents of an oil/water separator
- Solids contaminated with used oil
- Brake fluid
- Antifreeze
- Antifreeze sludge
- Parts-cleaning solvents, including aqueous cleaning solvents
- Hydroxide sludge contaminated solely with metals from a wastewater treatment process
- Paint-related wastes, including paints, thinners, filters, and sludge
- Spent photographic solution
- Dry cleaning solvents including perchloroethylene, naptha, and silicone-based solvents
- Filters, lint, and sludge contaminated with dry cleaning solvent
- Asbestos and asbestos-containing materials
- Inks from the printing industry
- Chemicals and laboratory packs collected from K-12 schools

- Absorbents contaminated with wastes on this list
- Filters from dispensing pumps for diesel and gasoline fuels

Transportation of Eligible Wastes

Generators are required to only use transporters that have registered and notified DTSC of their intent to operate under the consolidated manifesting procedures. [HSC §25165(a)]

Large transporters (transporters using the consolidated manifesting procedure for > 1,000 tons per calendar year) are required to submit quarterly reports electronically. Smaller transporters (< 1,000 tons/calendar year) must also submit quarterly reports in an electronic format unless they apply to DTSC to continue use of a paper format for their reports.

Records

The transporter using the consolidated manifesting procedures also becomes the generator of the waste (the original generator continues to maintain responsibility as the generator of the waste as well) and completes both the generator and transporter sections of the Uniform Hazardous Waste Manifest. The transporter, in lieu of a copy of the manifest, issues a receipt to the business offering the waste. The receipt must comply with HSC §25160.2(b)(3-4) and must contain:

- The name, address, identification number, contact person, and telephone number of the generator and the signature of the generator or the generator's representative
- The date of the shipment
- The manifest number
- The volume or quantity of each waste stream received, its California and RCRA waste codes (if applicable), the waste stream type (type of waste eligible under the consolidated manifesting procedure), and its proper shipping description, including the hazard class and UN/NA identification number, if applicable
- The name, address, and identification number of the authorized facility to which the hazardous waste will be transported
- The transporter's name, address, and identification number
- The driver's signature
- A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree, as determined by the generator, to be economically practicable

The transporter is required to attach to the front of the Uniform Hazardous Waste Manifest legible copies of receipts for each quantity of hazardous waste received from a generator. The total volume of hazardous waste transported in the vehicle is the combined volume of all receipts (and must therefore reconcile). A copy of the receipt must be left with the generator of the waste. **Generators must retain a copy of their receipts for at least three years from the date of shipment.**

As discussed earlier, all hazardous waste generators in the state of California must have either a U.S. EPA or CalEPA identification number. Transporters must not pick up waste from generators who do not have identification numbers.

E. WASTE SHIPMENTS FROM REMOTE SITES

HSC §25163.3 authorizes small quantities of HW generated at remote locations to be transported to a consolidation site without a Uniform Hazardous Waste Manifest [HSC §25160] or hazardous waste transporter registration [HSC §25163].

The term *remote site*, as used in HSC §25163.3, means a site operated by the generator where the HW is initially collected. The site is not routinely staffed (other than security staff) and is not contiguous to a site operated by the generator [HSC §15121.3].

The term *consolidation site*, as used in HSC §25163.3, means a site where HW initially collected from a remote site is transported for consolidation. HW transported to a consolidation site, pursuant to HSC §25163.3, is then deemed to be generated at the consolidation site and managed in compliance with HW management requirements.

The following alternative requirements apply to transported HW pursuant to HSC §25163.3:

- The HW is non-RCRA [HSC §25117.9] or

RCRA-exempt

- All conditions for a remote site as described above must be met [HSC §25121.3]
- Hazardous waste must not remain at the remote site for more than 10 days
- All transportation must be conducted by employees of the generator, by a contractor using vehicles under the control of the generator, or by a DTSC-registered HW transporter
- HW being transported from a remote site may not be held at any other location, except at another remote site operated by the generator, for more than eight hours, unless such holding is required by other provisions of law
- HW shipments are required to conform to all applicable DOT requirements for hazardous materials shipments
- No more than 275 gallons or 2,500 pounds may be transported at one time, except public and municipal utility districts, which may transport up to:
  - » 500 gallons of liquid HW or 1,600 gallons of hazardous wastewater from the dewatering of one or more utility vaults; OR
  - » 5,000 gallons of mineral oil from transformers, circuit breakers, or capacitors as long as the oil is not characteristic waste pursuant to 22 CCR §66261.24(a)(2)(B) (e.g., does not contain PCBs above 50 ppm total or 5 ppm soluble)

HSC §25163.3(g) requires the shipping papers to include:

- A list of the HW being transported
- The type and number of containers used to transport the HW
- The quantity, by weight or volume, of each type of HW
- The physical state of each HW (e.g., solid, powder, liquid, semi-liquid, gas)
- The location of the remote sites where the HW is collected
- The location of any interim sites at which the HW is held prior to delivery to the consolidation site
- The name, address, and telephone number of the generator and, if different, the address and telephone number of the consolidation site
- The name(s) of the individual(s) transporting HW
- The name and telephone number of an emergency response contact for use in the event of a spill or other release
- The date the generator began to actively manage the HW at the remote site, the date the shipment left the remote site, and the date the shipment reached the consolidation site

A shipping paper is not required if the total quantity of the shipment does not exceed 10 pounds of hazardous waste, with the exception of any quantity of extremely or acutely hazardous waste.

F. UNIVERSAL WASTES

Handlers of universal waste who ship or receive universal waste must keep a record of each shipment of universal waste shipped from or received at their facility. The record can take the form of a log, invoice, manifest, bill of lading, or other shipping document. The record must contain:

- The name and address of the originating universal waste handler or foreign shipper from whom the universal waste was sent
- The quantity of each type of universal waste received (e.g., batteries, thermostats, lamps, mercury switches, e-waste, CRTs, etc.)
- The date of receipt of the shipment of universal waste

A handler of universal waste must keep a record of each shipment of universal waste sent from the handler's facility to other facilities. The record can also take the form of a log, invoice, manifest, bill of lading, or other shipping document. Similarly, the record for each shipment of universal waste must include the following information:

- The name and address of the universal waste handler, destination facility, or foreign destination to whom the universal waste was sent
- The quantity of each type of universal waste sent (e.g., batteries, thermostats, lamps, mercury switches, e-waste, CRTs, etc.)

Uniform Hazardous Waste Manifest

Please print or type. Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone | **4. Manifest Tracking Number**

GENERATOR

5. Generator's Name and Mailing Address | Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name | U.S. EPA ID Number

7. Transporter 2 Company Name | U.S. EPA ID Number

8. Designated Facility Name and Site Address | U.S. EPA ID Number

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1.					
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. | 2. | 3. | 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

VOID

Uniform Hazardous Waste Manifest (Continuation Sheet)

Please print or type. Form Approved. OMB No. 2050-0039

GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	**23. Manifest Tracking Number**

24. Generator's Name

25. Transporter_____Company Name — U.S. EPA ID Number

26. Transporter_____Company Name — U.S. EPA ID Number

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

VOID

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter_____Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter_____Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 12-17) Previous editions are obsolete. **DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM**

- The date the shipment of universal waste left the facility

Records must be kept for three years from the date of receipt or shipment of the universal waste. It is also important to note that some universal wastes are regulated by DOT; such shipments must therefore comply with 49 CFR (e.g., aerosol cans and reportable quantities of mercury-bearing articles).

TECHNOTE: DOT IDENTIFICATION CODES FOR NON-BULK PACKAGING		
UN CERTIFICATION	**UN OR (un) CERTIFIES THAT THE PACKAGE MEETS REQUIREMENTS AND PERFORMANCE TESTS.**	
Package Identification Code	1 – Drum 2 – Wooden barrel 3 – Jerrican 4 – Box	5 – Bag 6 – Composite packaging 7 – Pressure receptacle
Material of Construction	A – Steel B – Aluminum C – Natural wood D – Plywood F – Reconstituted wood	H – Plastic L – Textile M – Multiwall N – Metal (other than steel/aluminum) P – Glass, porcelain, or stoneware
Package Category	1 – Non-removable head drum (closed) 2 – Removable head drum (open)	
Performance Standard	X – Meets Packing Groups I, II, and III tests Y – Meets Packing Groups II and III tests Z – Meets Packing Group III tests	
Specific Gravity/Mass	• Specific gravity of liquid (no inner packaging, may omit if < 1.2) • Mass of a solid (kilograms)	
Test Pressure	• For single and composite liquid packages, test pressure in kilo pascals (hydrostatic test pressure) • For solids or inner packaging, the letter S will appear	
Year of Manufacture	• Year: 2013, 2014, etc. • 1H and 3H packages must also have month marked	
Country of Manufacture	• USA, etc.	
Name of Manufacturer	• Name and address of manufacturer • Symbol of manufacturer • Name and address, or symbol, of approved agency certifying package	
Minimum Thickness	• Minimum thickness in millimeters (mm) • Applies to metal or plastic drums or jerricans intended for reuse or the outer package of a composite package	
Reconditions Marks	• Name of country • Name and address, or symbol, of reconditioner • Month and last two digits of year • The letter "R" for reconditioned • The letter "L" if passing a leak-proof test	
Examples	(un) 4GX/S/20/14/USA - AL0009 Fiberboard box / meeting PG I, II, or III standards / used for solids or inner packagings / maximum gross weight 20 kg / made in 2014 in the USA / Unique manufacturer's ID code (un) 1A1/Y/1.2/225/14/USA/VL825 - 1 mm closed-head steel drum / meeting PG II or III test standards / at a maximum pressure of 225 kilo pascals / tested to handle liquids with a maximum specific gravity of 1.2 / made in 2014 in the USA / Unique manufacturer's ID code / Minimum wall thickness	

SECTION VI: LAND DISPOSAL RESTRICTION REQUIREMENTS

A. BACKGROUND

All RCRA wastes and six categories of California waste are restricted from being disposed of to land without prior treatment. Land disposal restriction (LDR) regulations identify wastes that must be treated to specific standards. These treatment standards are either technology-based (a specified technology must be used) or constituent-based (specific constituents must be treated to a designated level). When a generator determines that a produced waste is hazardous, that generator must determine whether the waste is subject to a treatment standard. If the waste does not meet the treatment standard, the generator must notify the receiving facility that the waste is subject to the LDRs and specify which treatment standard the waste is subject to before the facility can dispose of the waste to land. If the waste meets the standard and is going directly to a land disposal facility, the generator must certify that the waste meets the treatment standard.

To meet these requirements, the generator must first **classify the waste**, determining if the waste is hazardous or nonhazardous and if it is a RCRA or a non-RCRA waste. This step is crucial, since only hazardous wastes are subject to the LDRs. Generators may contact the U.S. EPA Hotline or DTSC's Waste Evaluation Unit for assistance.

The generator must then **identify the treatment standard(s)** the waste is subject to and the effective date of the standard(s). This information is needed for the notice and certification and is important because the standards vary for different waste streams.

If the waste is to be managed at an off-site facility prior to land disposal, the generator must **provide notification** that describes the waste and the appropriate treatment standard(s). All restricted wastes are subject to this requirement.

If the waste is going directly to land disposal and the treatment standard is in effect, the generator must determine whether the waste meets the appropriate treatment standard(s) and **provide certification**. A major component of certification involves compliance testing to ensure that the waste meets the treatment standard. The types of waste analysis needed to demonstrate compliance vary with different treatment standards [see examples of certification statements at the end of this section].

In practice, most TSDFs prepare the LDR notification form for generators. It is important that the generator understand the importance of the LDR and what *notification* and *certification* signify. A generator must retain a copy of the LDR notification/certification form for each waste shipment. TSDFs usually provide a copy of the certification form with the manifest, and some include the notification in box 14 of the manifest.

B. DEFINITION OF RESTRICTED WASTE

A **restricted waste** is simply a waste that has been identified as being restricted from land disposal. All RCRA wastes are now restricted from land disposal. In California, all hazardous wastes were also at one time identified as restricted. SB 1222 repealed earlier legislation, effectively leaving only six California-regulated waste streams that require LDR forms to be completed in order to ship for disposal. The following non-RCRA hazardous wastes are subject to land disposal restrictions in California:

- Non-RCRA metal-containing aqueous wastes identified in 22 CCR §66268.29(a)
- Auto shredder waste identified in 22 CCR §66268.29(b)
- Hazardous waste foundry sand identified in 22 CCR §66268.29(c)
- Non-RCRA metal-containing fly ash, bottom ash, retort ash, or baghouse waste from sources other than foundries identified in 22 CCR §66268.29(d)
- Baghouse dust from foundries as identified in 22 CCR §66268.29(e)
- Asbestos-containing waste as defined in 22 CCR §66268.29(f)

DTSC is authorized to adopt new treatment standards that are more restrictive than the federal (RCRA) standards, but only if they meet the

following conditions:

- The additional state LDR treatment standard is necessary to protect public health, safety, and the environment
- Attainment of the additional standard can be practically achieved in California

C. RECYCLING & TREATMENT FACILITY REQUIREMENTS

Treatment and recycling facilities play an important role in the LDR program by providing waste management options for hazardous wastes that may have been disposed to land without treatment in the past. The LDR requirements described here for these facilities apply if the wastes accepted by the facilities, or waste residues generated by the facilities, are hazardous wastes subject to either the state or federal LDRs. If a treatment or recycling facility manages wastes subject to the LDRs, it should consider the following:

Modify permits for treatment: Submit modifications to the permitting agency. If the facility uses different or modified treatment methods to meet the treatment standards, the facility's operating permit must be updated to reflect these changes.

Amend waste analysis plans: Specify the waste necessary to confirm compliance with the treatment standards. Treatment facilities must include the compliance analysis required by the LDRs in their waste analysis plans. Although U.S. EPA allows facilities to use information about the waste provided by the generator, U.S. EPA also requires facilities to perform corroborative testing to ensure that wastes meet the treatment standards before land disposal. Changes in the waste analysis plans may be submitted at the same time as other permit modifications.

Provide notification and certification: If the waste or waste residue is subject to the LDRs and is shipped to another treatment facility or to a disposal facility, describe the waste and the appropriate treatment standard(s) and determine whether the waste meets the treatment standard(s) if the treatment standard(s) is in effect. The types of notification and certification that facilities need to provide vary with the situation.

D. SUMMARY OF NOTIFICATION & CERTIFICATION REQUIREMENTS FOR TREATMENT & RECYCLING FACILITIES

Off-site recycling: Forward the notification from the generator and provide certification if treatment standards are in effect and hazardous waste residues will be land disposed.[1]

On-site treatment: Provide notification and certification if treatment residues are disposed to land and provide the waste analysis plan if treatment is in tanks or containers subject to 40 CFR §262.34.[2]

Off-site treatment: Forward the notification from the generator and provide certification if treatment residues are disposed to land.

Transfer station: Forward the notification from the generator and provide certification if waste is disposed to land.

Off-site disposal: Forward the notification from the generator and provide certification if waste is disposed to land.

Out-of-state shipment: Keep notification on-site.

The LDRs limit the types and forms of hazardous waste land disposal facilities may accept. A disposal facility's major responsibilities are to identify wastes, determine the treatment standards, and confirm that the waste meets the standards. These facilities also have important waste analysis and recordkeeping requirements. To comply with the LDRs, TSDFs must:

Review waste analysis plans: Ensure the facility performs the waste analysis necessary to confirm compliance with the treatment standards. Land disposal facilities must include the compliance analysis required by the LDRs in their waste analysis plans. Although U.S. EPA allows facilities to use information about the waste provided by the generator, U.S. EPA also requires facilities to perform corroborative testing to ensure that wastes meet the treatment standards before land disposal.

Receive notification and certification: Ensure

1. Off-site treatment, recycling, or disposal takes place away from the waste generation site.

2. On-site treatment, recycling, or disposal takes place on the site of generation.

the proper waste descriptions and generator information are provided and that the generator or treatment facility certifies that the treatment standards are met. The types of notification and certification that generators and treatment facilities must provide vary.

Compliance Options

In some instances, treatability variances, no-migration exemptions, and case-by-case extensions may apply. In California, however, no-migration exemptions are available only for certain land treatment facilities.

Reporting & Recordkeeping

All notifications, certifications, demonstrations, waste analysis data, and other information that the disposal facility either received or produced must be kept in the facility's operating record until facility closure. If the facility accepts wastes subject to a case-by-case extension or no-migration petition, the facility must also record the quantities and date(s) of placement of these wastes.

Sample Notification/Certification Form For California Non-RCRA Land Disposal Restricted Wastes

This form must be completed in accordance with the requirements of 22 CCR §66268, which restricts the land disposal of California hazardous wastes. This form must be completed and accompany the California regulated waste to the permitted treatment, storage, and disposal facility. A copy of this completed form must be kept at the generating facility with the associated manifest.

Generator location: _____ EPA ID no.: _____

Waste stream name: _____ Date: _____

Approval/profile no.: _____ Manifest no.: _____

COMPLETE THIS TABLE FOR CALIFORNIA REGULATED WASTES		
Check Here		*Reference 22 CCR §*
	Metal-containing aqueous waste as identified in 22 CCR §66268.24(a)(2)(A)	66268.107(a)
	Auto shredder waste	66268.106(a)(1)
	Hazardous waste foundry sand	66268.106(a)(2
	Baghouse waste from foundries that contains any of the metals or metal compounds identified in 22 CCR §66261.24(a)(2)	66268.106(a)(3)
	Fly ash, bottom ash, retort ash, or baghouse waste from sources other than foundries that contains any of the metals or metal compounds identified in 22 CCR §66261.24(a)(2)	66268.106(a)(4)
	Asbestos-containing wastes as identified in 22 CCR §66268.29(f)	66268.114

A. Restricted waste requires treatment, California Waste Code no.(s): _____

B. Restricted waste subject to an exemption or variance, California Waste Code no.(s): _____

This waste is subject to an exemption or variance and is not prohibited from land disposal. The exemption or variance expires on: _____

C. Restricted asbestos that may be land disposed, California Waste Code no.(s): _____

I warrant that I am an authorized representative of the generator. I certify under penalty of law that the waste complies with the treatment standards specified in 22 CCR, Division 4.5, Chapter 18, §66268.114. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and/or imprisonment.

Signature: _____

Title: _____ Date: _____

Sample Notification/Certification Form For Federal RCRA Disposal Restricted Wastes

This form must be completed in accordance with 40 CFR §268 and 22 CCR §66268. These parts regulate the land disposal of hazardous wastes that have been listed or identified as restricted. This form must be completed and accompany the federally regulated waste to the permitted treatment, storage, and disposal facility. A copy of this completed form must be kept at the generating facility for a minimum of 5 years with the associated manifest.

Generator location: _____

EPA ID no.: _____

Waste stream name: _____

Approval/profile no.: _____ Manifest no.: _____

California Waste Code no.(s): _____ Manifest item no.: _____

I. Waste identification (please check appropriate item):

Non-Wastewater ☐ Wastewater ☐

II. The appropriate box below indicates how the waste must be managed to conform to the land disposal regulations.

☐ A. Restricted waste, requires treatment (EPA Waste Codes listed below)

☐ B. Restricted waste, subject to a variance

EPA Hazardous Waste Codes: _____

The waste identified above is subject to a national capacity variance or a case-by-case extension. This variance expires.

☐ C. Lab pack, requires treatment (alternate treatment under 40 CFR §268.42)

EPA Hazardous Waste Codes: _____

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes that have not been excluded under Appendix IV to 40 CFR §268 or solid wastes not subject to regulation under 40 CFR §261. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and/or imprisonment.

☐ D. Hazardous debris, requires treatment (alternate treatment standards) (EPA Waste Codes listed below/ on following page)

This hazardous debris is subject to the alternative treatment standard 40 CFR §268.45.

III. List waste code, sub-category or constituent, and indicated box checked above.

EPA HAZARDOUS WASTE CODE	SUB-CATEGORY OR UNDERLYING HAZARDOUS CONSTITUENTS IN THE WASTE	INDICATE LETTER OF BOX CHECKED IN SECTION II ON PREVIOUS PAGE

If D001 (not combusted), D002, D012 – D048, and/or F039, list any constituents listed in 40 CFR §268.48 that apply unless all regulated constituents will be monitored by the treatment facility (see CFR §268.40).

If F001 – F005, list constituents unless all regulated constituents will be monitored by the treatment facility (see 40 CFR §268.40).

Tables with treatment standards are found in 22 CCR or 40 CFR as referenced.

Title: _____ Date: _____

Signature: _____

SECTION VII: TIERED PERMITTING

A. BACKGROUND

In 1993, Assembly Bill (AB) 1772 established a five-tiered program for permitting (or authorizing) the treatment and/or storage of hazardous waste. The regulations can be found in 22 CCR §67450 and HSC §25200-25205. The program is broadly called Tiered Permitting (TP). Eligibility for the different tiers depends on the:

- Type (concentration/composition) of hazardous waste being treated or stored
- Volume treated
- Treatment process used

To streamline the permitting process, the legislature added new tiers to make permitting easier for businesses that treat hazardous waste that was generated on-site within their normal operations. Tiered permitting allows the businesses engaged in certain low-risk treatment activities to simply notify their respective CUPA via the California Environmental Reporting System (CERS) to gain authorization. In this way, the burden of regulation is matched to the amount of risk in the hazardous waste activity and administrative costs are reduced. Compliance is determined through regulatory inspections by the CUPA after notification by the generator.

Except for on-site recycling operations, you are required to have a permit or other authorization if you treat, store, or dispose of a hazardous waste. You may be eligible for a streamlined permit if you treat hazardous waste on-site and if it is not extremely hazardous or reactive. The waste must be managed in tanks or containers. On-site recycling requires significant reuse of the recycled material at the location/site where the waste is produced. A recycling report is required to be submitted to the local CUPA via CERS every two years when ≥ 100 kg is recycled each month. In some cases, this report is required annually, so it is important for generators to check with their CUPA to determine the required frequency for the report.

B. DEFINITIONS

Treatment of a hazardous waste is any chemical, physical, or biological process designed to change the character or composition of a hazardous waste after it has been generated. Examples of treatment[1] are as follows:

- Filtering
- Gravity settling
- Separating
- Grinding
- Evaporating
- Electro-winning
- Shredding
- Crushing
- Compacting
- Adsorbing
- Mixing
- Reducing
- Drying
- Ion exchange
- Adjusting pH
- Biological degradation

It is important to understand the technical meaning of selected terms in order to determine whether they apply to a generator's hazardous waste management activities. Remember that the method of treatment is one factor used to determine the appropriate operating tier.

Disposal means to abandon, discharge, deposit, inject, dump, spill, leak, or place any waste so that it may enter the environment. Only properly permitted facilities may dispose of hazardous waste.

Storage is the holding of a hazardous waste for a temporary period beyond that allowed for generator accumulation. After storage, the waste is treated, disposed, or transported elsewhere. Storage requires a permit or other grant of authorization; however, accumulation is allowed without a permit.

Under both federal and state regulations, no one may treat, store, or dispose of a hazardous waste without a permit or DTSC authorization. The

1. Refer to TP Flowchart for complete lists.

following activities for non-RCRA hazardous wastes are excluded from the definition of *treatment*:

Sieving or **filtering** liquid hazardous waste to remove solid fractions if no heat, chemicals, or pressure are used and as long as it is performed when the waste is added to or removed from a facility storage or generator accumulation tank or container. Sieving or filtering does not include adsorption, reverse osmosis, or ultra filtration.

Phase separation of non-RCRA hazardous waste during storage or generator accumulation in tanks or containers, if unaided by adding heat or chemicals. Phase separation of oil and water in oil/water separators do not meet this exemption.

The act of **commingling** or **combining two or more streams** of compatible waste material if all of the following apply:

- The waste streams are combined solely for consolidating waste at the workplace accumulation area or at the waste accumulation area or are consolidated for off-site shipment
- The waste streams are not being combined to meet a fuel specification or to otherwise be chemically or physically prepared to be treated, burned for energy value, or incinerated
- The combined waste stream is managed in compliance with the most stringent of the regulatory requirements applicable to each individual waste stream

Evaporation of water from non-RCRA hazardous wastes in tanks or containers, without adding pressure, chemical, or heat (other than sunlight or ambient room lighting or heating).

Cleaning equipment to remove residues (that is considered non-RCRA hazardous waste after removal) is considered generation and not treatment as long as the equipment is in use and not being disposed of. The provisions do not apply to removal of residues from equipment that was/is used to manage hazardous waste. [22 CCR §66261.7]

C. POINT OF WASTE GENERATION & POINT OF WASTE TREATMENT

The point of waste generation occurs at the point a solid waste is produced by a system, process, or waste management unit and is determined to be a hazardous waste as defined in 40 CFR §261. The point of generation can also occur when the owner or operator accepts delivery or takes possession of the hazardous waste generated off-site. For more information on point of generation (POG), refer to Section III of this manual.

The hazardous waste must be generated on-site to be eligible for treatment under the tiered permitting criteria.

The point of waste treatment is the point at which the hazardous waste to be treated exits the treatment process, in accordance with 40 CFR §265.1083(c)(2) and 22 CCR §66260.10. A waste determination must be made before the waste is conveyed, handled, or otherwise managed in a manner that allows the waste to volatilize to the atmosphere.

At the point of generation, a waste determination must be made. Following the determination, samples should be taken at the point of waste generation. The waste must then be classified as a RCRA hazardous, non-RCRA hazardous, or non-hazardous waste.

When wastes from multiple sources or points of generation are mixed (e.g., discharged into the same pipe), waste determination must be made at each POG prior to mixing. If any source is hazardous, the waste stream is also hazardous.

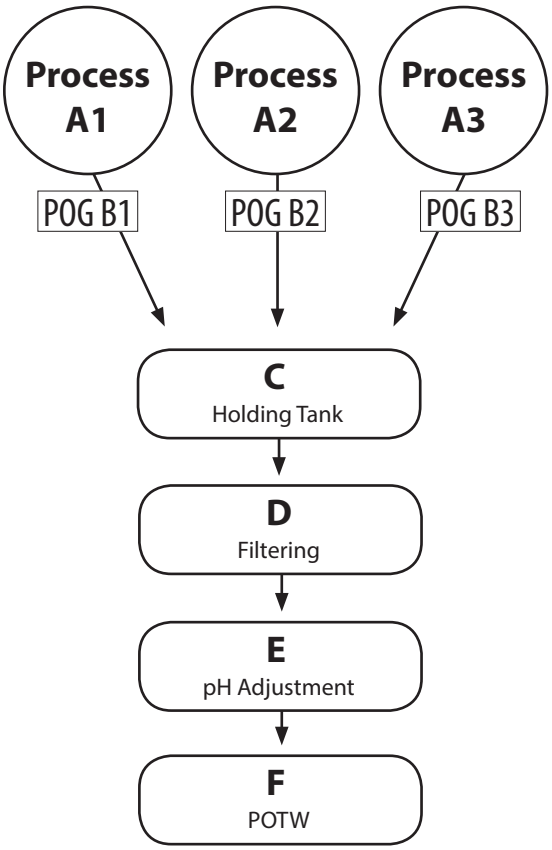
Benchtop treatment of laboratory hazardous waste can be performed without a permit provided that:

- Waste is treated in containers
- Incompatible wastes are not mixed together
- Waste is treated using recommended procedures for treatment of laboratory wastes (e.g., those published by the National Research Council, *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals*)
- Treatment occurs at a location close as practicable to where the waste was generated
- Treatment is conducted within 10 calendar days after the waste is generated
- The lesser amount of laboratory waste treated of either 5 gallons or 18 kilograms (whichever is greater) or the quantity limit recommended in the applicable treatment procedures published in *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals*

- The wastes treated in any single batch are part of the same laboratory process
- The person performing the treatment has adequate training
- The waste and the treatment residuals and effluents are properly managed
- Records are maintained and made available upon request

WHERE IS THE POINT OF WASTE GENERATION?

Water Parts With Metal & Grease



The points of generation are **B1**, **B2**, and **B3**, as the waste exits each process or system. The waste leaving each system may be hazardous due to process characteristics. Each waste stream (**B1**, **B2**, and **B3**) should be sampled and tested, or the generator could use knowledge of the process to classify the waste as hazardous or non-hazardous. If any of the waste streams (**B1**, **B2**, or **B3**) is a hazardous waste, then hazardous waste treatment is occurring, and an on-site treatment permit would be required.

D. TREATMENT UNITS

Treatment of hazardous wastes takes place in treatment units. A permit is needed for each treatment unit, and it is important to determine the number of treatment units being used. A treatment unit is a combination of tanks, tank systems, and/or containers that:

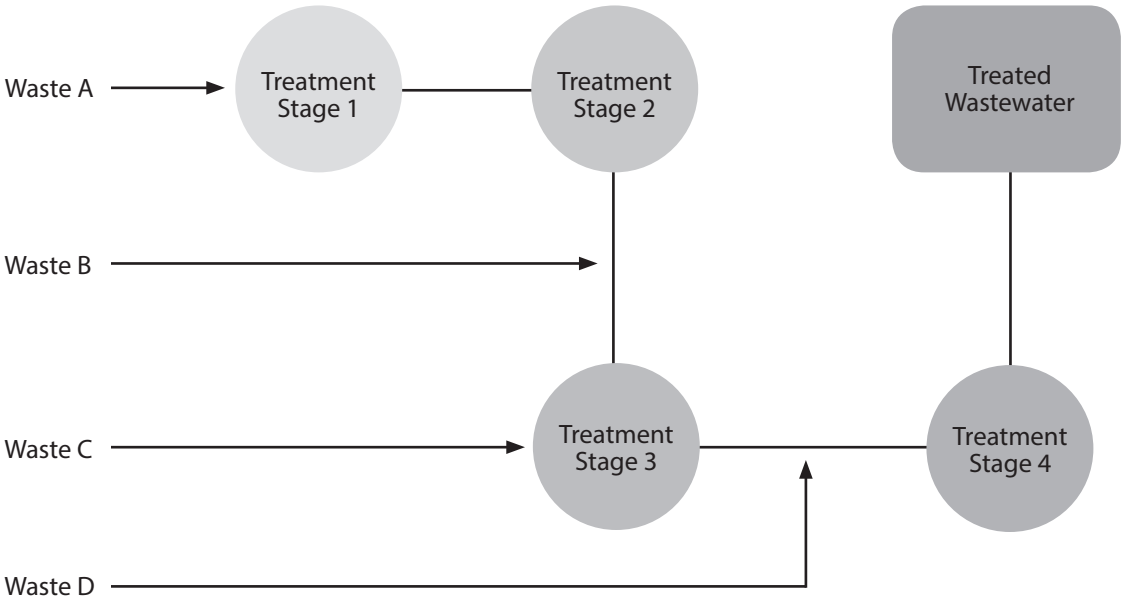
- Are located together
- Are used in sequence
- Treat one or more compatible hazardous waste streams
- Are plumbed together or otherwise linked to form one treatment system

Treatment units may be either:

- Fixed treatment units, which are closed containers or tanks permanently stationed on-site at a single facility; waste is typically brought to the unit for treatment, but the fixed treatment unit may move and operate on-site throughout the facility; OR
- Transportable treatment units, which are closed containers or tanks that move from facility to facility to treat waste; the unit is typically taken to the waste for treatment and is not permanently stationed on-site

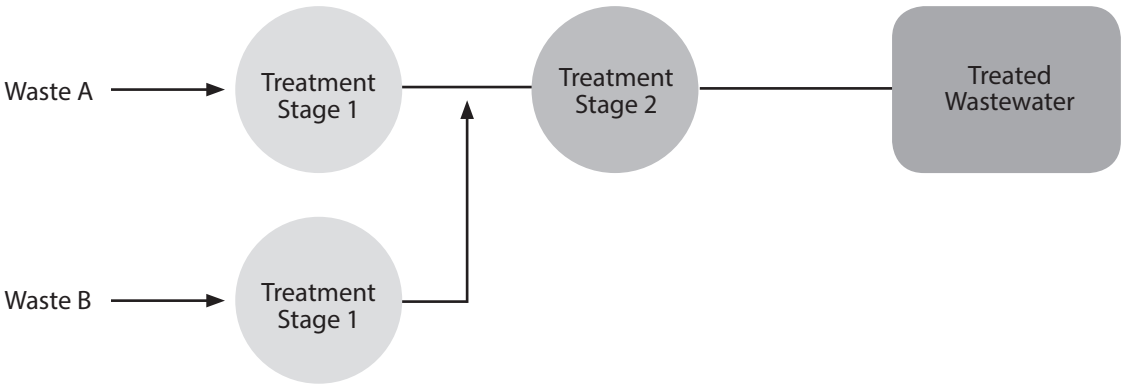
There may be multiple treatment stages within a treatment unit.

HOW MANY TREATMENT UNITS ARE IN THIS SYSTEM?



This is only one treatment unit, because treatment stages occur in sequence—even though untreated waste streams may enter the system at various points.

HOW MANY TREATMENT UNITS ARE IN THIS SYSTEM?



There are two treatment units, because treatment stages occur out of sequence—even though untreated waste streams may enter the system at various points (i.e., there are Stage 1 treatment units).

Hint: Do not assume that all Stage 1 treatments are the same!

Sampling Your Waste

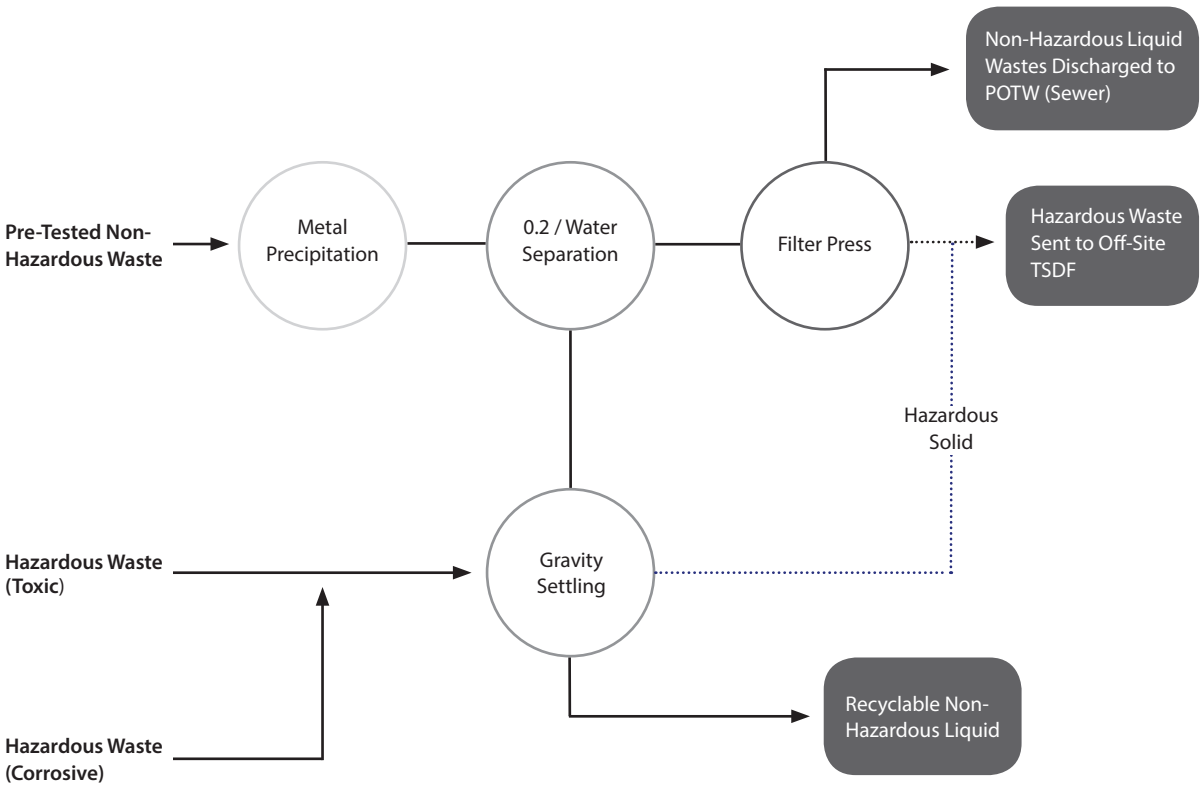
Initial sampling is required to determine if you are a generator of hazardous wastes. If you treat waste on-site, you must sample further to determine whether the waste being treated is hazardous waste. If it is hazardous waste, an on-site permit may be required, and the type of treatment tier under which you will be permitted to operate must also be determined.

To determine the proper tier, waste samples must be taken at:

- The exit point prior to treatment from a generating process, when it first becomes a hazardous waste (look at sample points A on the diagram below—both the toxic and corrosive hazardous wastes must be sampled), to determine the metal content, pH, percent concentration of acids, etc.
- The point wastes are commingled prior to treatment, to determine any change in hazard characteristics [see sample point B on the diagram below]—remember that commingling may result in the addition or removal of a hazard characteristic such as ignitability, corrosivity, etc.

The reason the commingled waste stream must be evaluated is to determine if:

- Any reaction has occurred as a result of combining waste streams
- There has been a change in content or concentration
- A liquid, sludge, or solid has been generated
- Any change in hazard characteristics has occurred



E. TREATMENT TIERS

The five tiers for treatment of hazardous waste apply only to hazardous wastes that do not meet the recycling exemptions in Section G: Exemptions. In some cases, more than one tier can apply to a facility. The two most highly regulated tiers are:

Full Permit: Applies to RCRA waste treated, stored, or disposed of on-site and accepted from other locations. Fees vary for each site and can be hundreds of thousands of dollars. Used oil treatment and incineration are included here.

Standardized Permit: Applies to most non-RCRA waste that is received from other facilities for treatment and storage. Fees vary for each site and can be thousands of dollars.

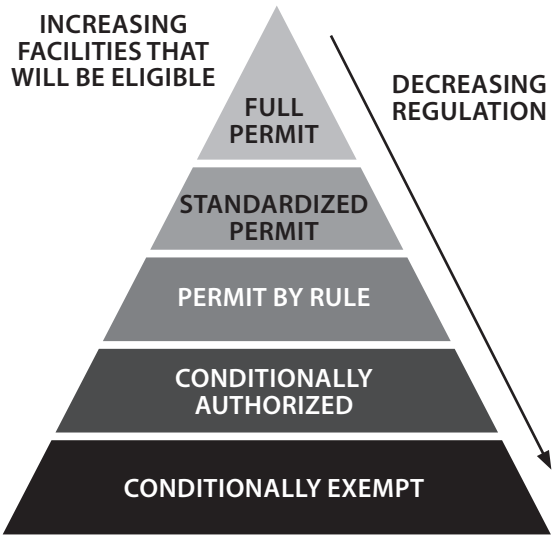
The other three tiers cover non-RCRA and RCRA wastes for which waste treatment is federally exempted (e.g., RCRA waste treatment before being discharged to your local sewer district). These three tiers require formal notification to the CUPA and the payment of fees:

Permit By Rule (PBR): Allows a facility treating certain waste streams with designated methods to notify the CUPA of its operation and to receive authorization to conduct the treatment without extensive prior review by the CUPA.

Conditionally Authorized (CA): Applies to a category of waste streams that, if treated using specified treatment technologies and if not exceeding established volumes of waste treated, are allowed to be treated without prior review from the CUPA.

Conditionally Exempt (CE): Applies to specified categories of lowest-risk waste streams and treatment of limited volumes of waste that are authorized by the CUPA without prior review by the CUPA. The CE tier is further divided into four categories:

- Conditionally exempt small quantity treatment (CESQT)
- Conditionally exempt specified waste streams (CESW)
- Conditionally exempt limited (CEL)
- Conditionally exempt for commercial laundries (CECL) [HSC §25144.6]



Three Lower Tiers: General Rules

The eligibility requirements for the most common tiers that affect businesses seeking to treat their waste on-site will be described here. The tiers are shown in order of decreasing complexity.

- Permit by rule
- Conditionally authorized (CA)
- Conditionally exempt (CE), which includes:
  - » Small quantity treatment (CESQT)
  - » Specified waste stream (CESW)
  - » Limited (CEL)
  - » Limited, commercial laundries (CECL)

Before considering specifics to determine applicable tiers, it is important to review some major rules that apply to all on-site treatments:

- Waste streams and treatment processes not found on the flow diagrams provided are not currently eligible for the three lower on-site tiers
- CA is for wastes that are hazardous due to only a single hazard (such as toxicity or corrosivity); if the waste is hazardous for more than one reason, then it may require a PBR
- The lower tiers CA and CE are used for lower-risk volumes of wastes; high-risk and volume wastes are reserved for PBR
- Wastes not eligible for the lower three tiers can be permitted under standardized (state) or full

(RCRA) permits

- To be eligible for CESQT, you may not have any other hazardous waste treatment permit at that facility [HSC §25201.5(a)(2)]
- Wastes must be treated at the facility where they were generated
- Reactive or extremely hazardous wastes are not currently eligible under these tiers, except specific waste streams under CESW
- Waste testing by a certified laboratory may be required

PBR/CA/CE: Eligibility Rules

The following pages include flowcharts that are used to determine your eligibility for the three lower tiers. Remember, lower tiers have fewer regulatory conditions and also cost less in annual fees!

1. First determine if your waste is hazardous and subject to tiered permitting. If you are uncertain, test it.

2. Find your waste stream on the waste stream list in the sidebar to the left (the number of the waste stream on the list matches the circled waste stream on the flowcharts). If you cannot find your waste stream, you may not be eligible for PBR, CA, or CE; consult with DTSC's closest regional office.

3. Find your waste stream on the flowcharts and, moving to the right, locate the treatment technology to be used and note any special conditions (e.g., volume, concentration).

4. Check your treatment volume per month and, for some wastes, concentration limits. Remember:

- CESQT is per facility
- Most other tiers are per unit
- PBR and CA have volume limits per unit

5. Follow the arrow to the tier on the right.

6. Examine the criteria for operating under that tier to verify that you have chosen the right tier.

7. Check the statute or regulation to determine any special eligibility conditions. It is wise to check 22 CCR periodically for new rules or policies that may affect your waste stream(s) and tier.

The following example illustrates the process for determining eligibility and treatment tier:

Waste stream: oil mixed with water

Treatment technology/process: phase separation (oil/water separator)

Treatment volume: > 55 gallons/month/facility

Characteristic of aqueous waste (water): non-hazardous waste

1. First, determine if the oil/water waste stream is hazardous. Oil/water waste streams often are not hazardous, and therefore a permit is not needed. Testing (e.g., 96-hour fish bioassay) is often necessary to determine whether the waste stream is hazardous. If hazardous, proceed to step 2.

2. From the waste stream list, find oil mixed with water. The waste stream designation is 10b.

3. Refer to the 10b flowchart (oil mixed with water, oil/water separation sludge), and find the treatment technology (phase separation).

4. Determine the applicable waste stream volume. In this example, the waste stream volume is > 55 gallons.

5. Determine the tier the treatment falls under. If the amount of oil recovered by the oil/water separator is < 25 barrels or 1,375 gallons, the treatment falls under the conditional exemption specified waste streams (CESW) tier. If it exceeds this limit, the treatment falls under the conditional authorization (CA) tier.

Waste Streams Eligible Under Tiered Permitting

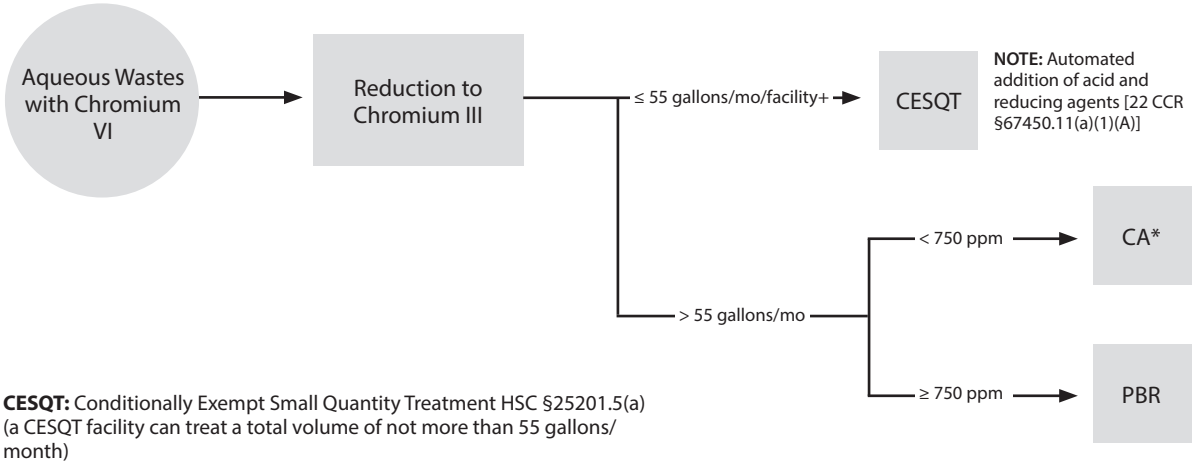
- Aqueous wastes with Chromium VI
- Aqueous wastes with metals
- Aqueous wastes with organic compounds not listed and containing < 10% TOC and < 1% VOC
- Aqueous wastes with organic compounds listed in 22 CCR §66261.24(a)(1)(B) or §66261.24(a)(2)(B)
- Sludges (wastewater treatment and other types), solid metal objects, workings (containing or contaminated with metals)
- Wastewater treatment sludges, solid metal objects, metal workings containing or contaminated with metals, and dusts containing < 750 ppm metal

- Alum, gypsum, lime, sulfur, or phosphate sludges
- Wastes listed in 22 CCR §66261.120 that meet the criteria and requirements for classification as special wastes
- Special wastes listed in 22 CCR §66261.24
- Inorganic acid or alkaline wastes
- Corrosive wastes from regeneration of ion exchange residues (used to demineralize water)
- Acid/alkaline wastes corrosive due to presence of food products and generated by SIC group 20
- Acid/alkaline wastes from laboratory treatment [HSC §25200.3.1]
- Acid/alkaline wastes from biotechnology manufacturing or processes by SIC code subgroups 283, 2833, 2834, 2836, 8731, 8732, 8733
- Soils contaminated with metals
- Used oil, unrefined oil waste, mixed oil
- Oil mixed with water
- Oil/water separation sludge
- Used oil mixed with water hazardous only because of oil content, excluding contaminated groundwater, water containing gasoline, or > 2% diesel
- Containers < 110-gallon capacity (no wood, paper, cardboard, fabric, or other absorptive material)
- Aerosol cans
- Resins
- Photographic wastes [HSC §25143.13], silver-only RCRA-exempt waste streams, or photo imaging solution
- Dry cleaning wastes hazardous solely due to perchloroethylene (PCE) content
- Commercial laundry facility waste [HSC §25144.6]
- Laboratory waste [HSC §25200.3.1]
- Quality control or quality assurance laboratory [HSC §25201.5(c)(8)]
- Waste stream/technology combination certified by DTSC [HSC §25200.1.5, pending regulations]
- Technology certified by DTSC [HSC §25200.1.5]
- Consolidation and remote sites

On-Site Tiered Permitting Flowchart

For Non-RCRA or Exempt Hazardous Waste Facilities Conducting On-Site Treatment

1.



CESQT: Conditionally Exempt Small Quantity Treatment HSC §25201.5(a) (a CESQT facility can treat a total volume of not more than 55 gallons/ month)

CESW: Conditionally Exempt Specified Waste Stream [HSC §25201.5(c)]

CEL: Conditionally Exempt-Limited [HSC §25201.14]

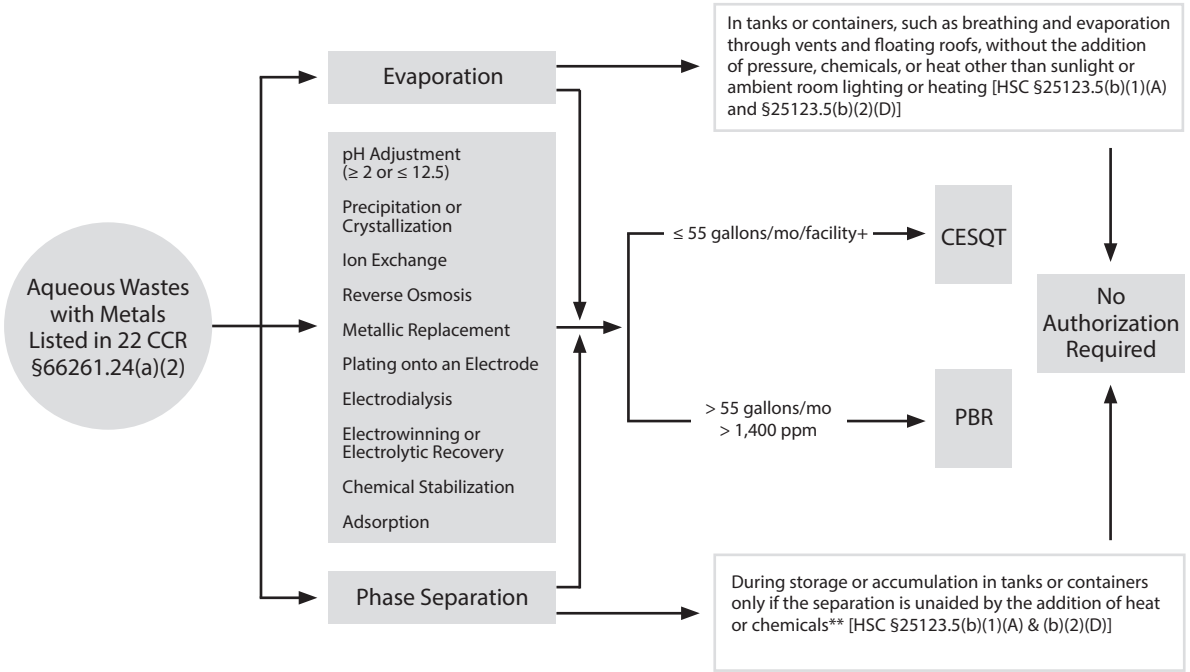
CECL: Conditionally Exempt Commercial Laundries [HSC §25144.6(c)]

CA: Conditional Authorization [HSC §25200.3]

PBR: Permit by Rule [22 CCR, Div. 4.5, Chapter 45]

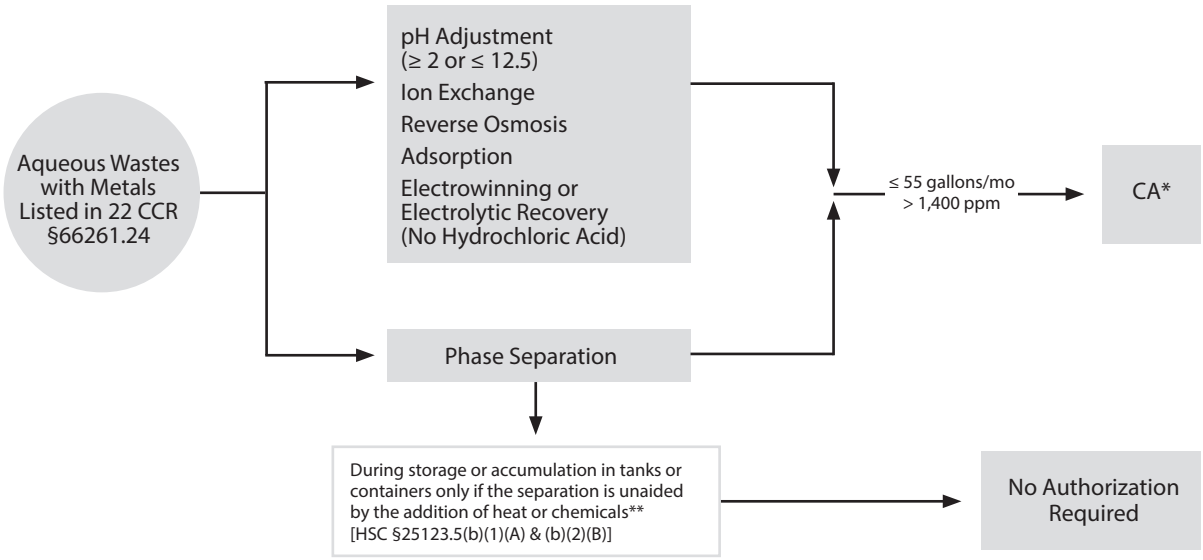
* Must be hazardous solely due to this characteristic

2a.



** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

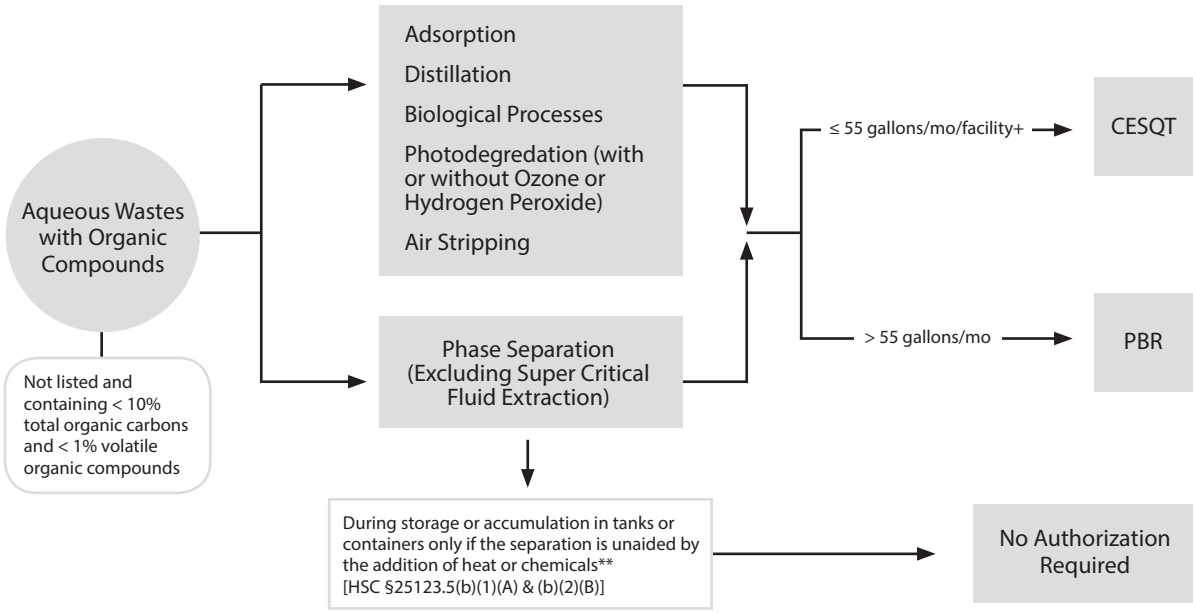
2b.



* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

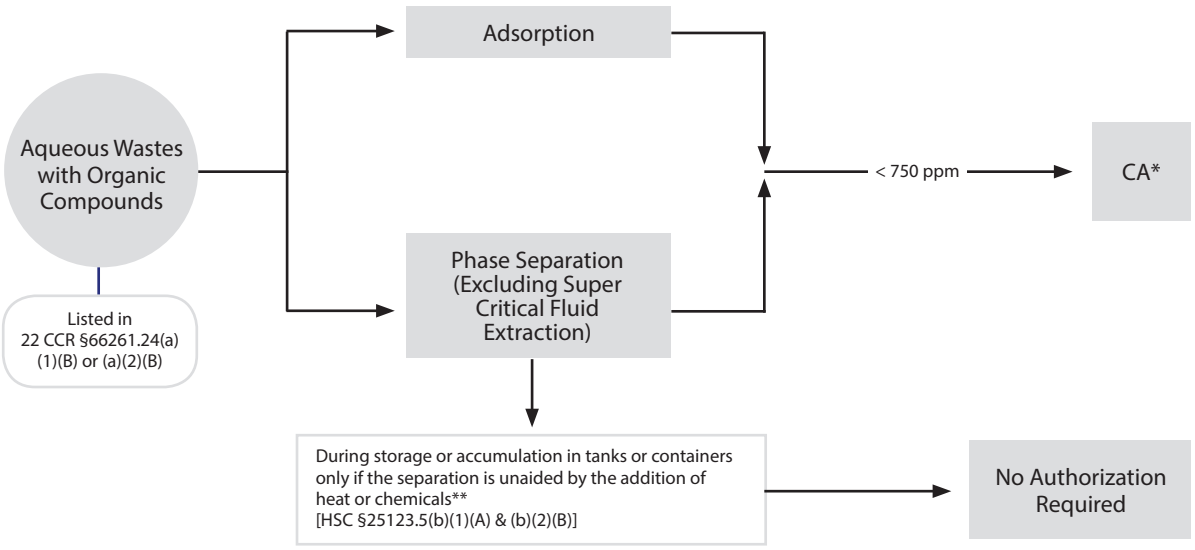
3a.



* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

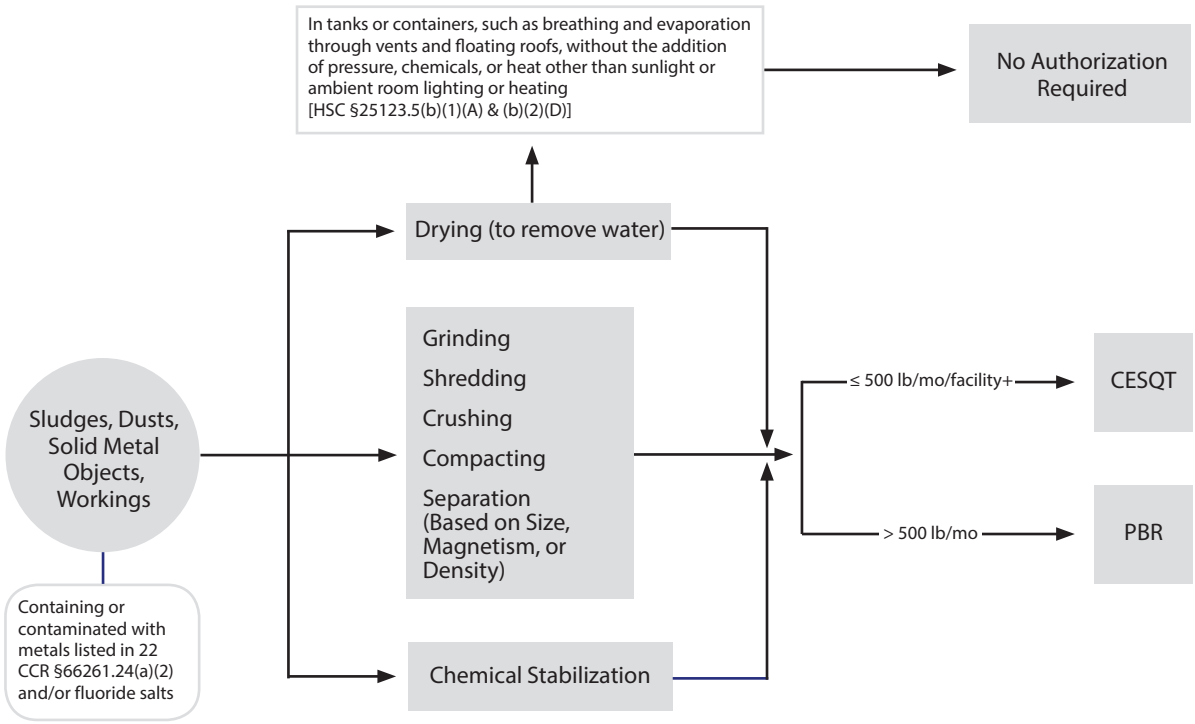
3b.



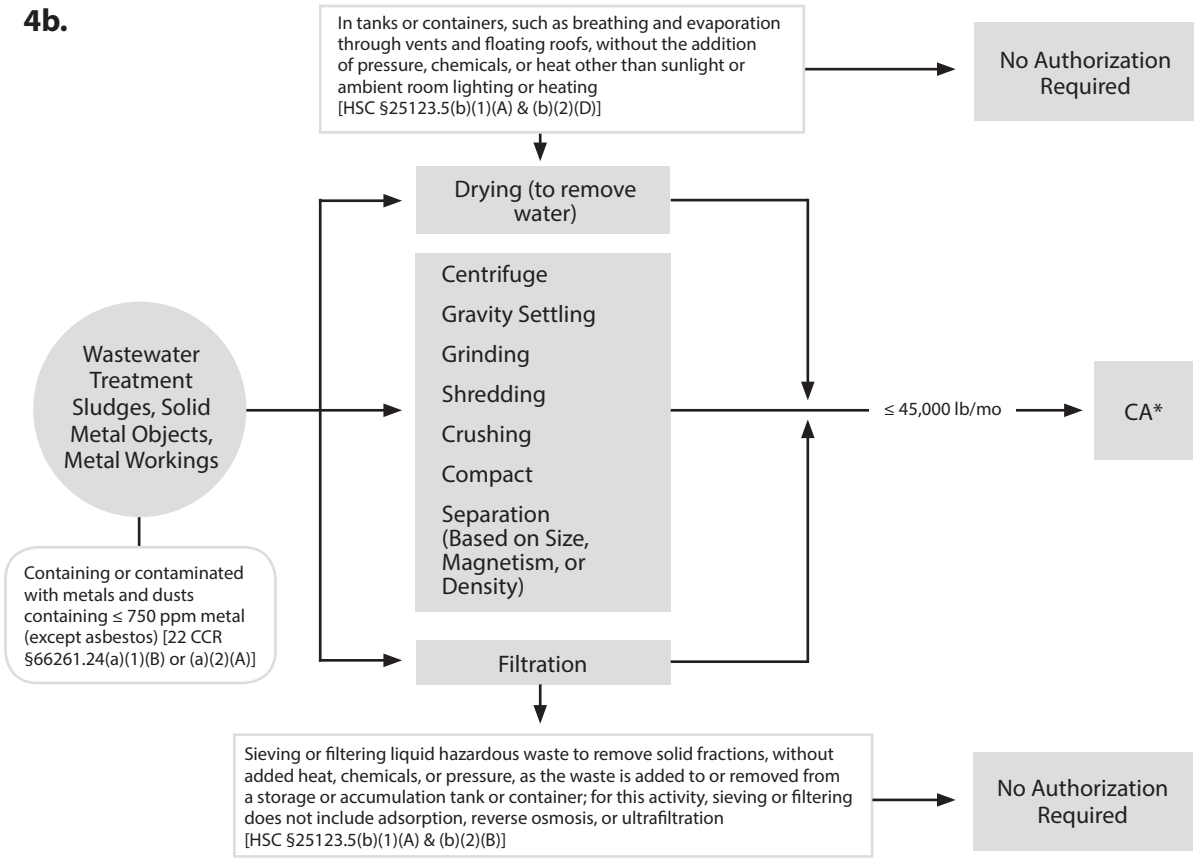
* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

4a.

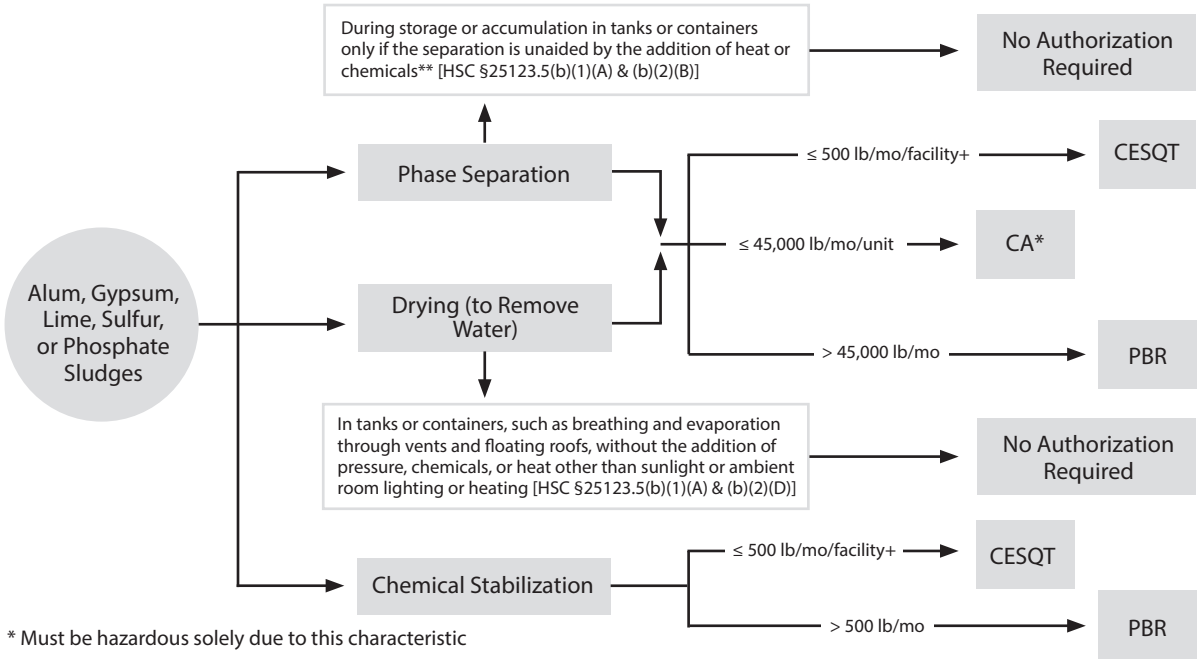


4b.



* Must be hazardous solely due to this characteristic

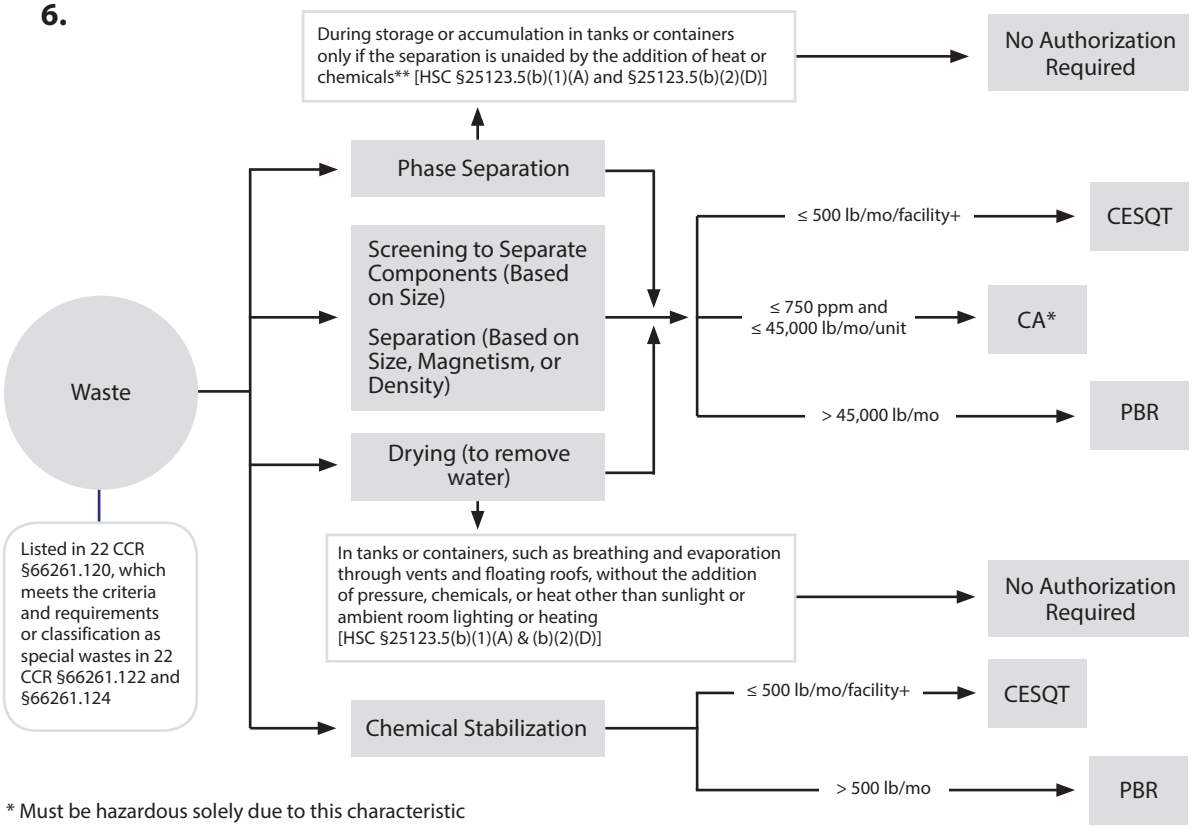
5.



* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

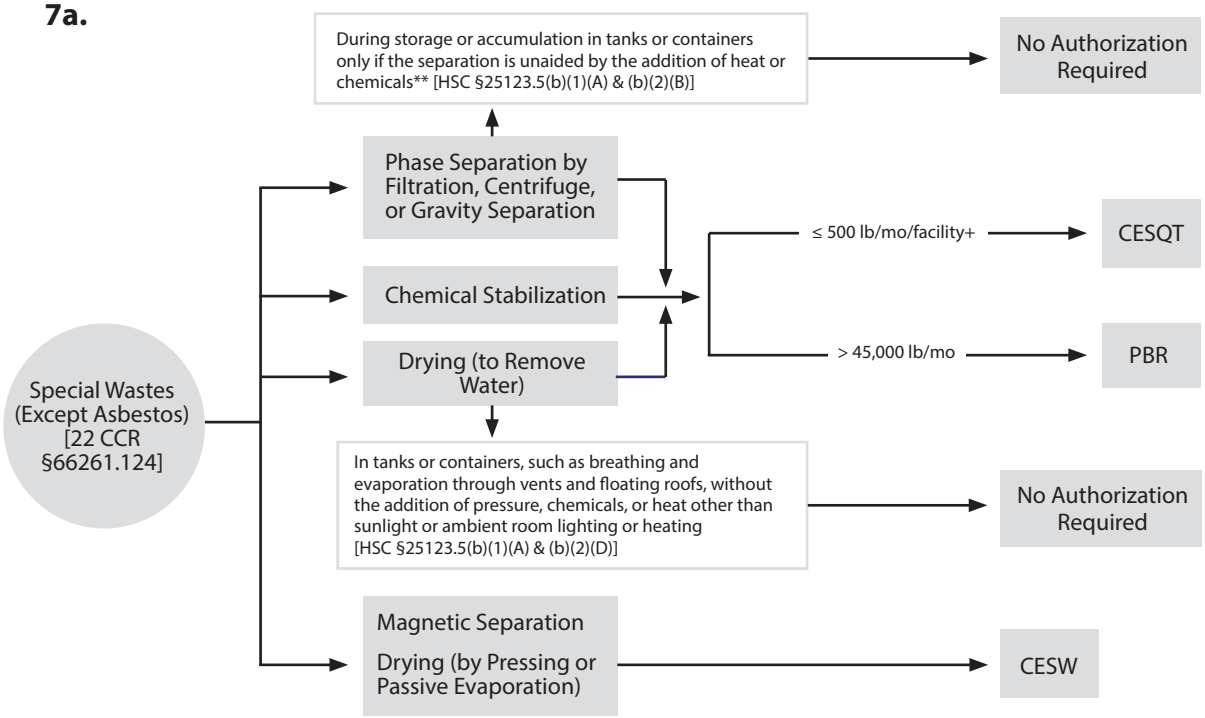
6.



* Must be hazardous solely due to this characteristic

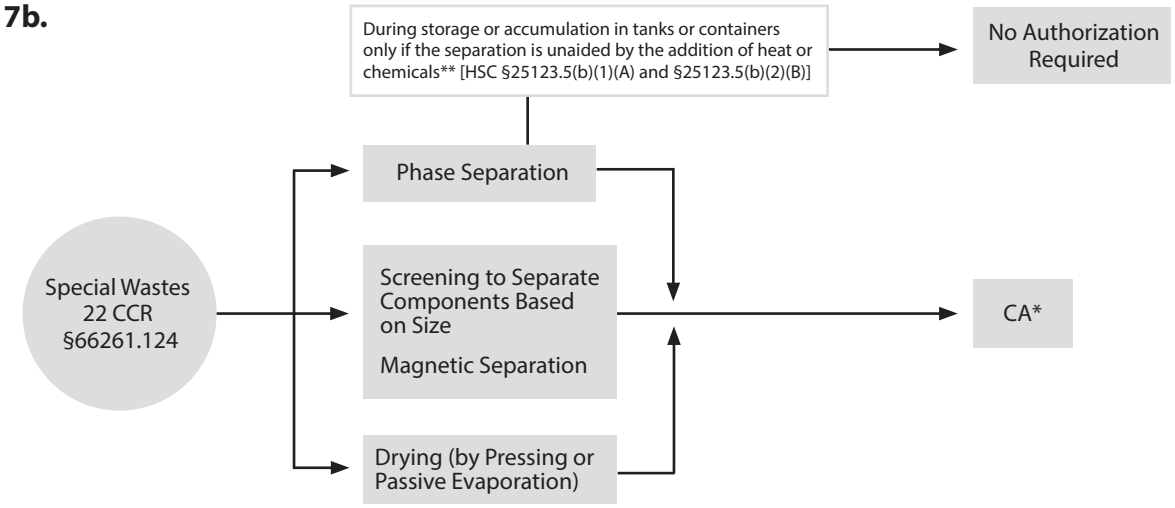
** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

7a.



** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

7b.



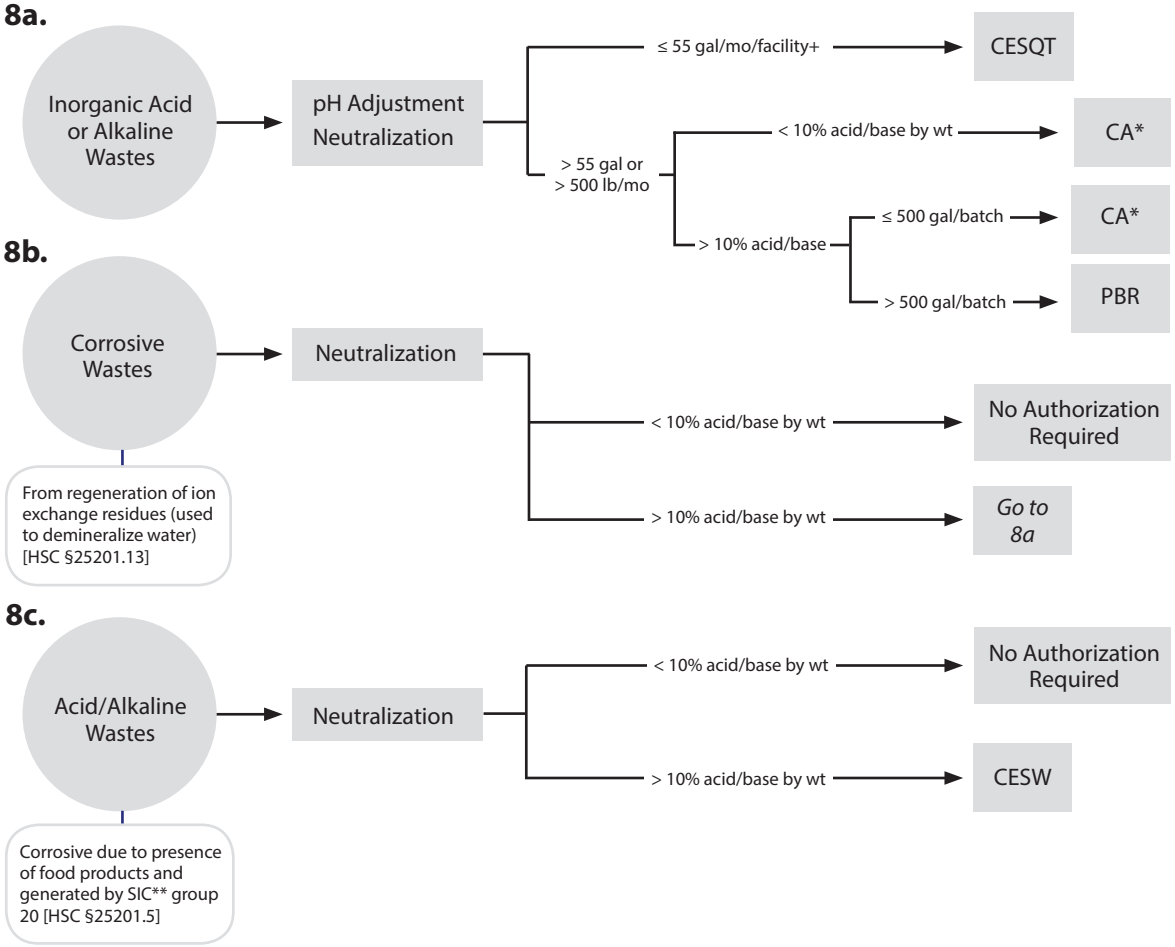
* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

8a.

8b.

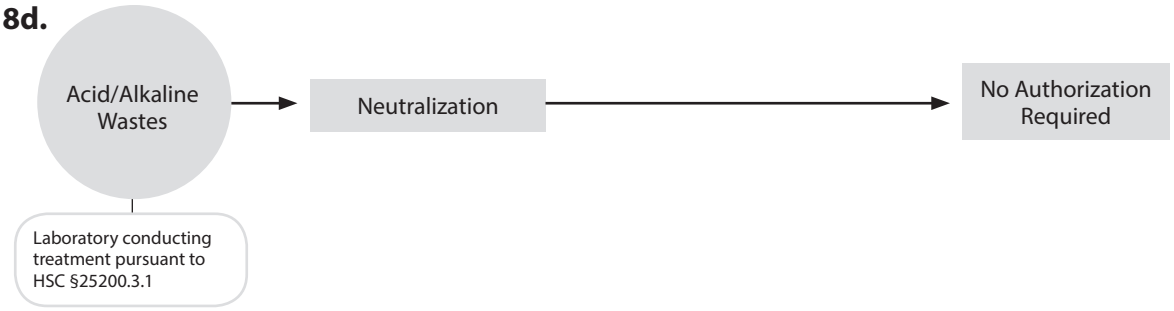
8c.



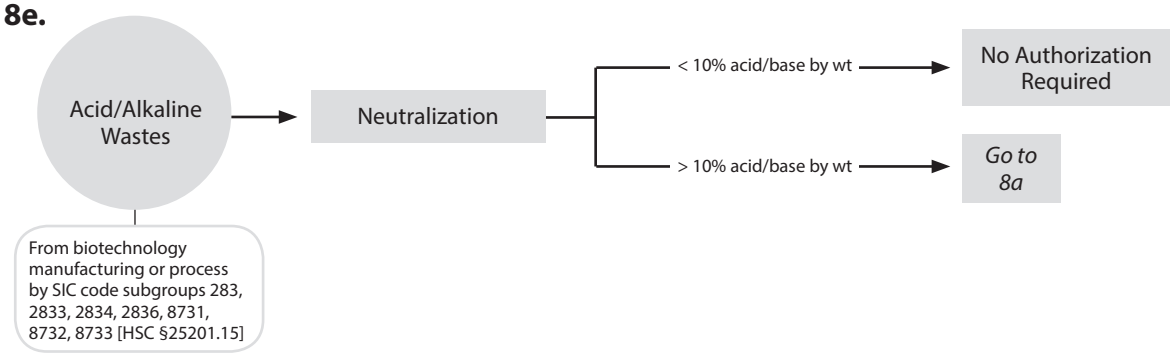
* Must be hazardous solely due to this characteristic

** North American Industry Classification System (NAICS) was adopted in 1997 to replace the Standard Industrial Classification (SIC) system

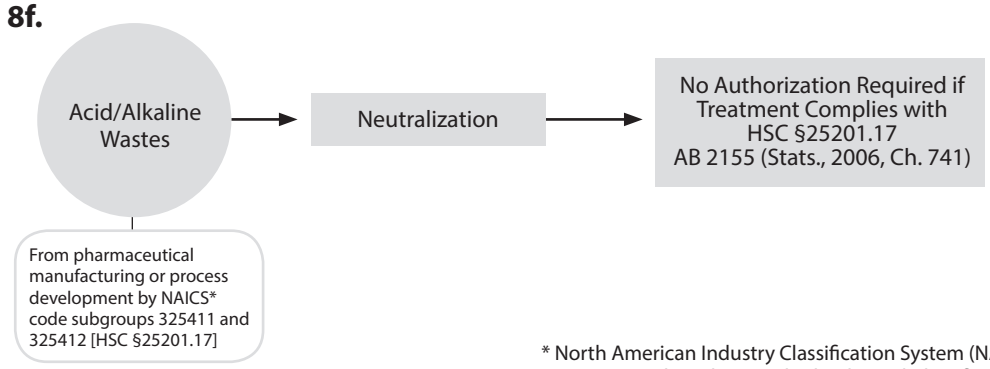
8d.



8e.

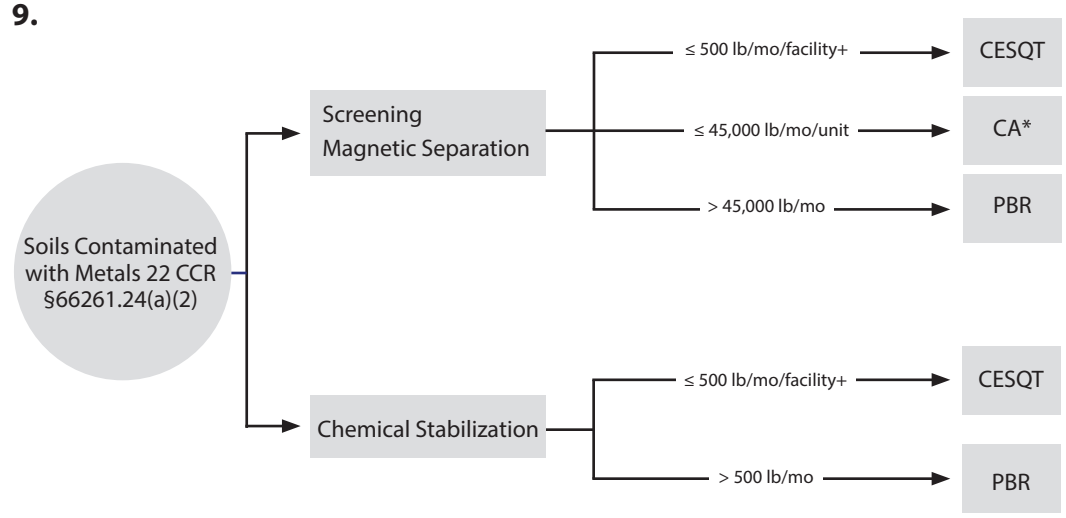


8f.



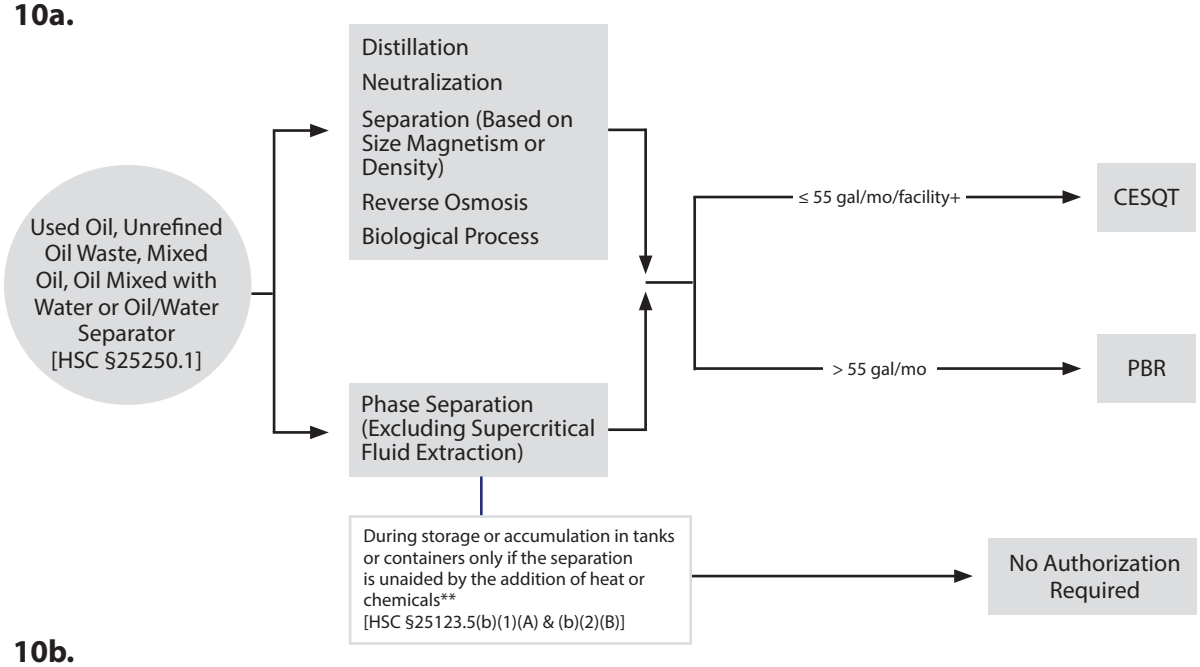
* North American Industry Classification System (NAICS) was adopted in 1997 to replace the Standard Industrial Classification (SIC) system

9.

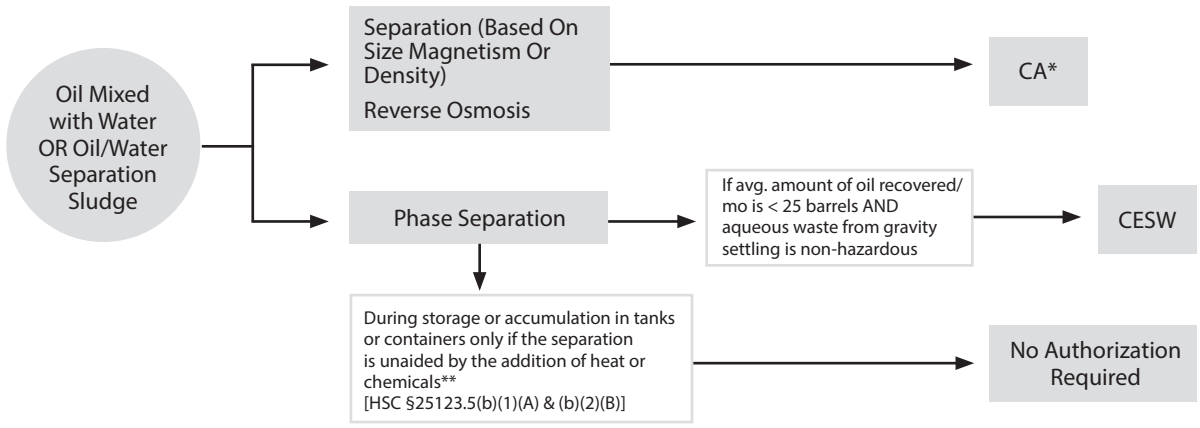


* Must be hazardous solely due to this characteristic

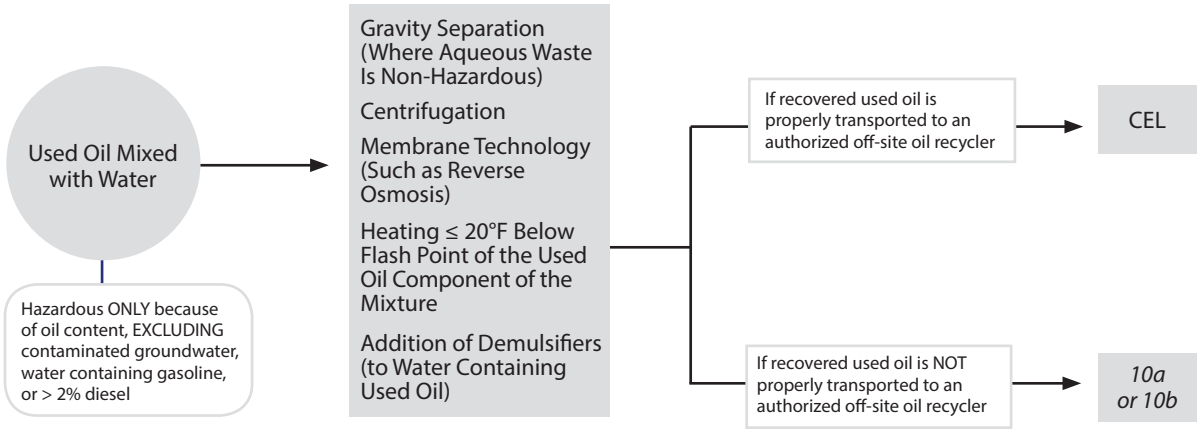
10a.



10b.



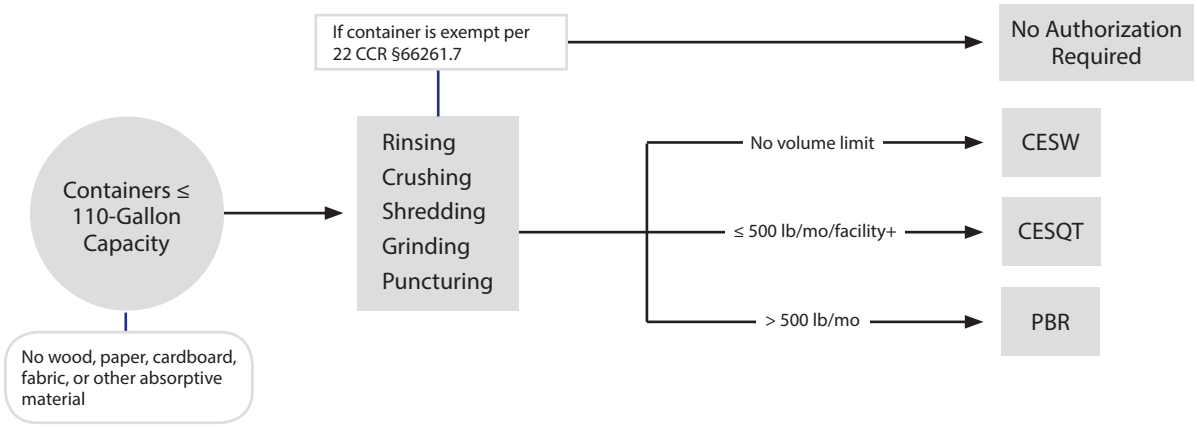
10c.



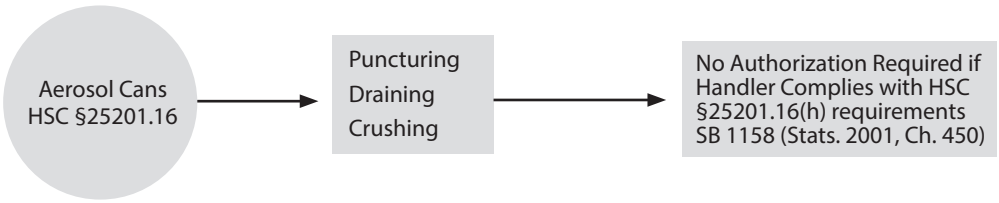
* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

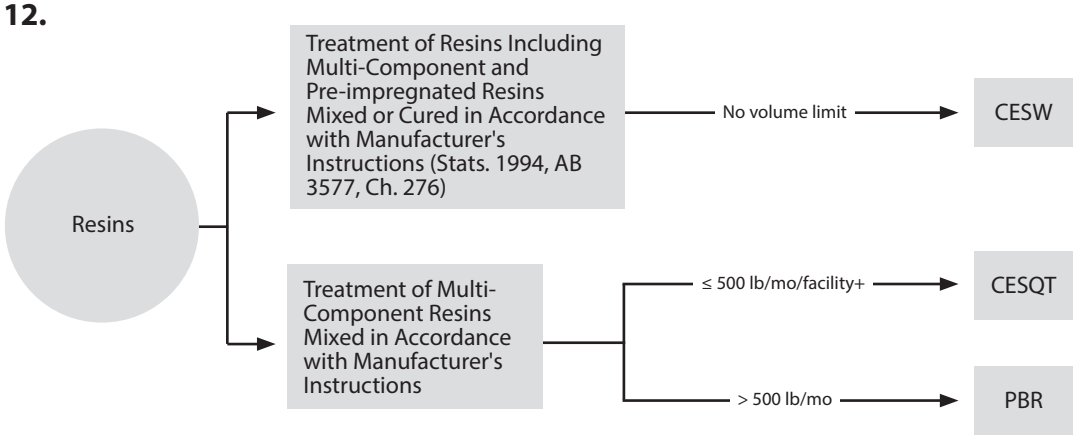
11a.


If container is exempt per 22 CCR §66261.7
No Authorization Required
Containers ≤ 110-Gallon Capacity
Rinsing
Crushing
Shredding
Grinding
Puncturing
No volume limit
CESW
≤ 500 lb/mo/facility+
CESQT
> 500 lb/mo
PBR
No wood, paper, cardboard, fabric, or other absorptive material

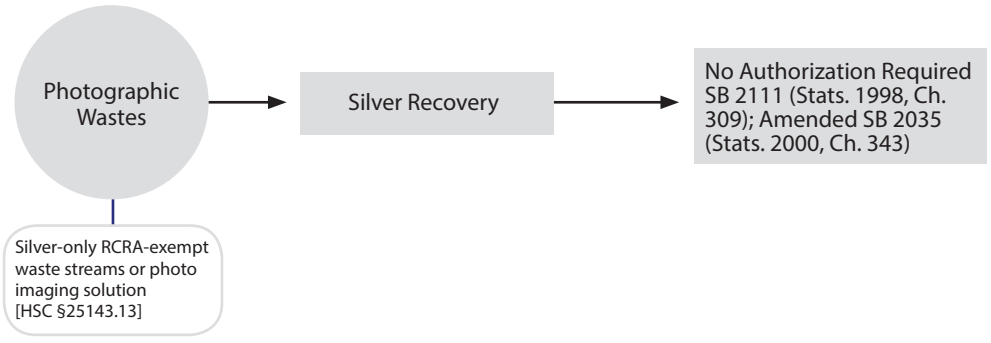
11b.


Aerosol Cans HSC §25201.16
Puncturing
Draining
Crushing
No Authorization Required if Handler Complies with HSC §25201.16(h) requirements SB 1158 (Stats. 2001, Ch. 450)

12.


Resins
Treatment of Resins Including Multi-Component and Pre-impregnated Resins Mixed or Cured in Accordance with Manufacturer's Instructions (Stats. 1994, AB 3577, Ch. 276)
No volume limit
CESW
Treatment of Multi-Component Resins Mixed in Accordance with Manufacturer's Instructions
≤ 500 lb/mo/facility+
CESQT
> 500 lb/mo
PBR

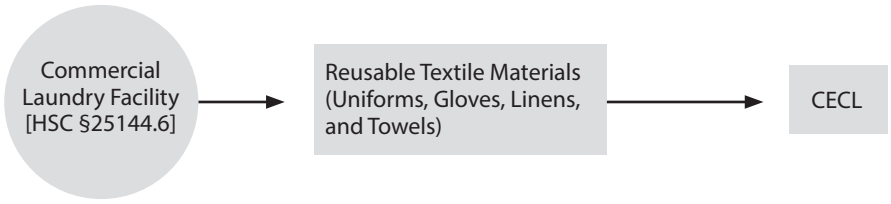
13.


Photographic Wastes
Silver Recovery
No Authorization Required SB 2111 (Stats. 1998, Ch. 309); Amended SB 2035 (Stats. 2000, Ch. 343)
Silver-only RCRA-exempt waste streams or photo imaging solution [HSC §25143.13]

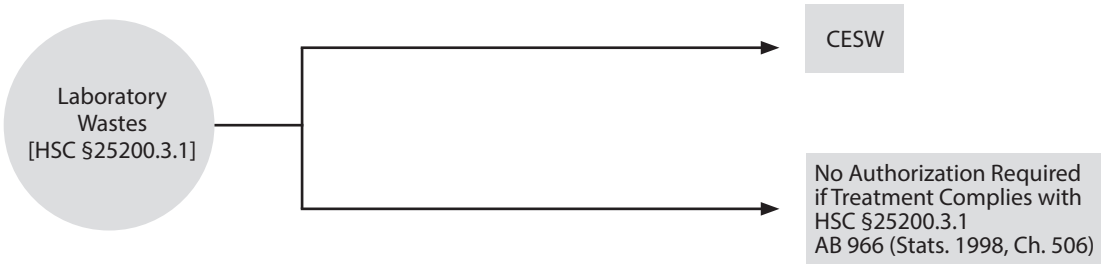
14.

Dry Cleaning Wastes
≤ 180 gal/mo
No Authorization Required AB 1772 (Stats. 1992, Ch. 1345); Amended SB 1191 (Stats. 1995, Ch. 639)
> 180 gal/mo
Go to 3a
HSC §25201.8 (hazardous solely due to PCE [perchloroethylene] content)

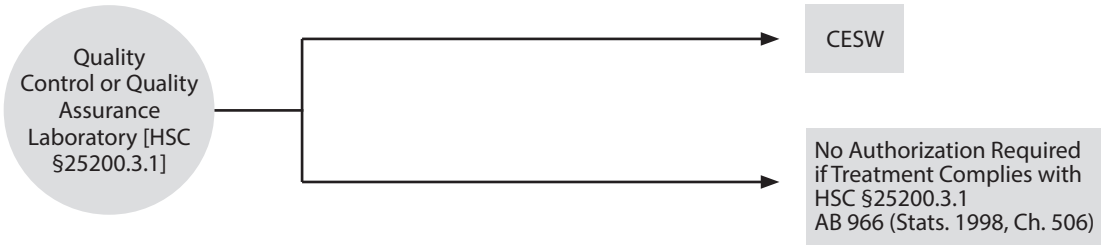
15.


Commercial Laundry Facility [HSC §25144.6]
Reusable Textile Materials (Uniforms, Gloves, Linens, and Towels)
CECL

16a.

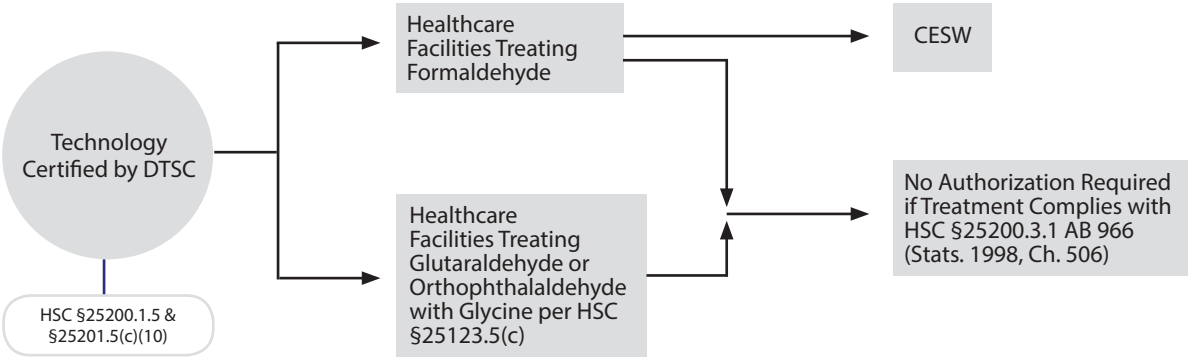

Laboratory Wastes [HSC §25200.3.1]
CESW
No Authorization Required if Treatment Complies with HSC §25200.3.1 AB 966 (Stats. 1998, Ch. 506)

16b.

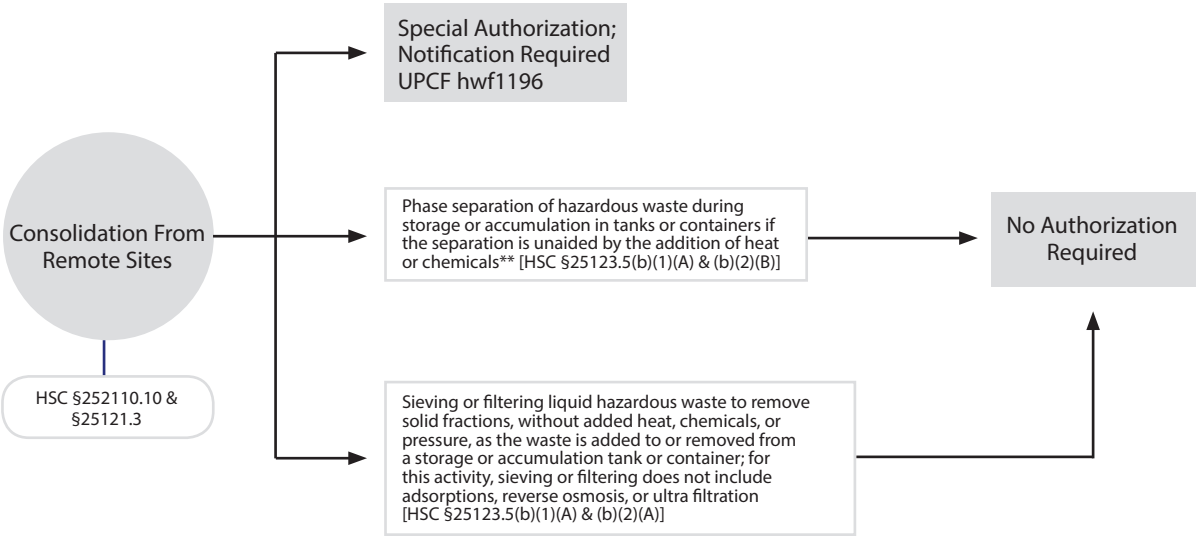

Quality Control or Quality Assurance Laboratory [HSC §25200.3.1]
CESW
No Authorization Required if Treatment Complies with HSC §25200.3.1 AB 966 (Stats. 1998, Ch. 506)

17.

18.



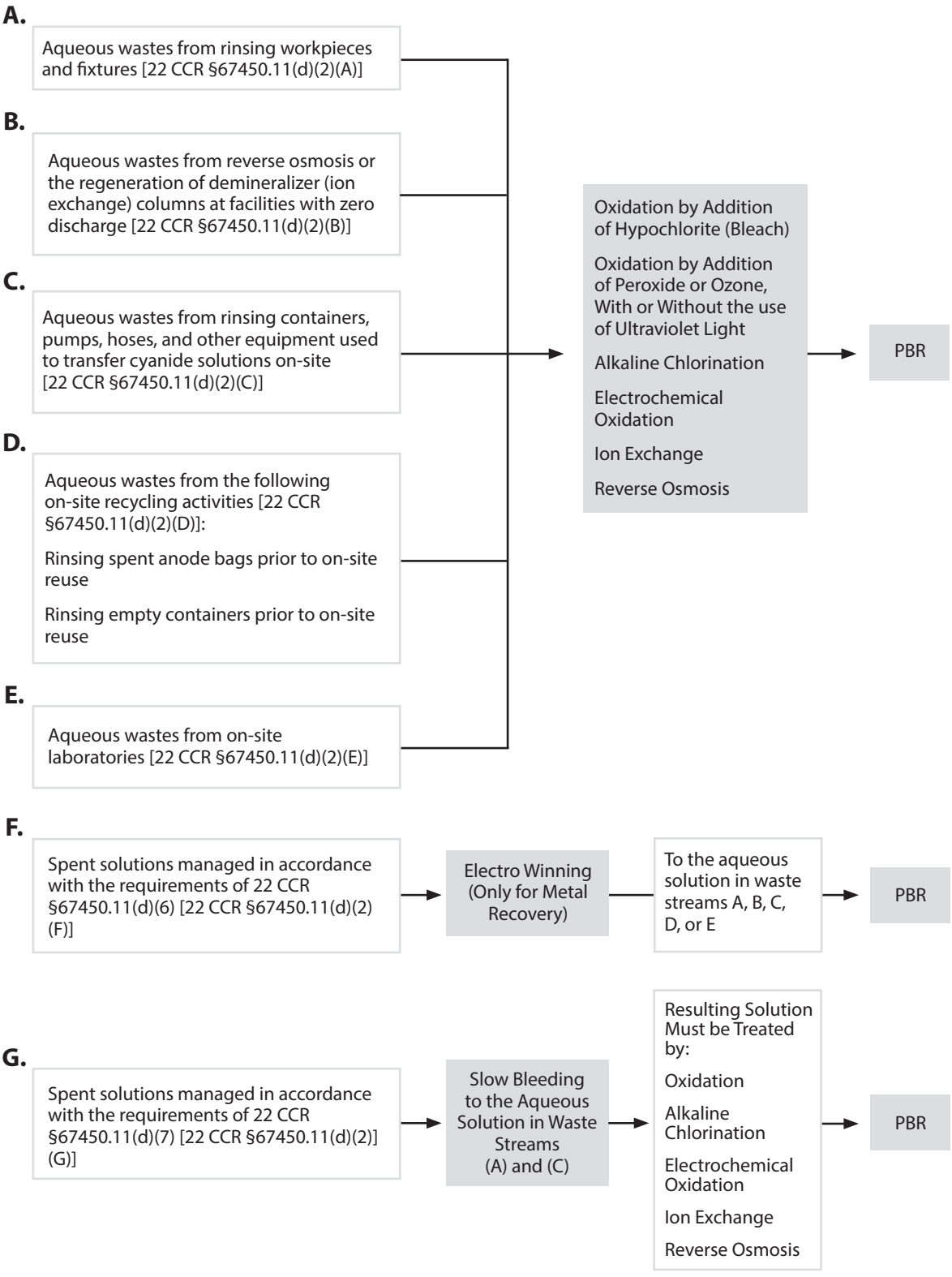
19.



* Must be hazardous solely due to this characteristic

** Containers must be closed except when adding/removing hazardous wastes [22 CCR §66265.173]

Cyanide Treatment [22 CCR §67450.11(d)(2)]



Additional requirements for dilution of process solutions:

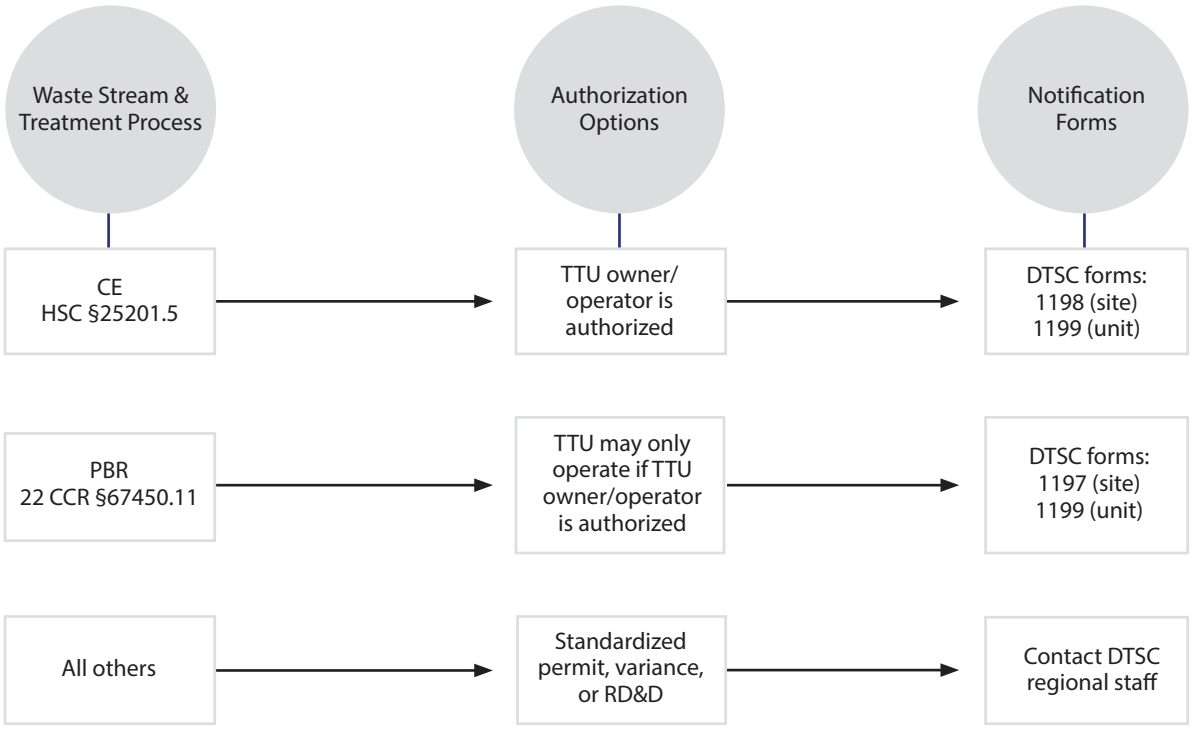
- Total cyanide concentration limited to 5,000 mg/L after dilution
- Written approval from the agency operating the POTW
- Waste analysis plan (cyanides)
- Residual solids removed are recycled by a facility that recovers metals including documentation
- By January 30, prepare justification statement when residuals are not recycled for the previous calendar year
- Records to be maintained at the facility for 3 years

For all cyanide treatments under PBR:

- Comply with best management practices
- Employee training (initial and annual training to employees who handle cyanide process solutions or cyanide rinse waters or manage cyanide waste)
- Evaluate cyanide alternatives every 4 years

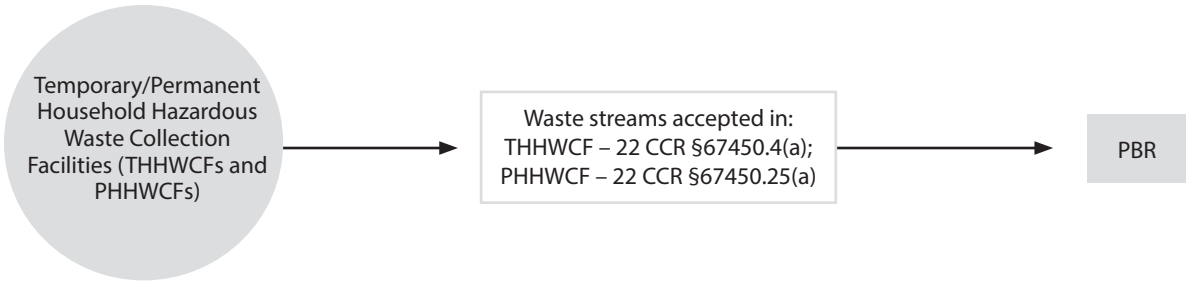
Transportable Treatment Units

NOTE: Submit TTU Notifications to DTSC, not to the CUPA



PBR Collection Facilities

1.



2.

F. TIERED PERMITTING AUTHORIZATION & NOTIFICATION

All Tiers

Generators must notify their local CUPA to receive authorization to treat hazardous waste. Notification is made by completing and submitting to their CUPA On-site Hazardous Waste Treatment Notification Unit and Facility and the appropriate On-site Tiered Permitting Waste and Treatment Process Combinations pages the Unified Program Consolidated form as well as a diagram for each treatment unit and sampling data to support the tier selected by the generator.

Conditionally Exempt (CE)

A written inspection schedule and log of inspections must be maintained. If applicable, facilities must meet POTW industrial wastewater discharge requirements. The owner/operator of the facility must develop written operating instructions. Records of dates, volumes, types of wastes treated, and methods for residual management are also to be kept for each treatment unit. Upon closure of the treatment unit, the facility must notify DTSC and the appropriate CUPA of the treatment unit closure and ensure all requirements are met. Records must be maintained at the facility for three years. CEL must show through sampling and analysis that there is no contaminated groundwater from the use of an oil/water separator.

Conditionally Authorized (CA)

A written inspection schedule and log of inspections must be maintained. If applicable, facilities must meet POTW industrial wastewater discharge requirements. The owner/operator of the facility must develop written operating instructions. Records of dates, volumes, types of wastes treated, and methods for residual management are also to be kept for each treatment unit. Upon closure of the treatment unit, the facility must notify DTSC and the appropriate CUPA of the treatment unit closure and ensure all requirements are met. Records must be maintained on-site for five years.

Tanks or containers used during the treatment process are required to have secondary containment that is compatible with the waste, is free of cracks and leaks, prohibits contact with accumulated liquid (such as rainwater), and has sufficient capacity to contain the contents of the tank/container and possible rainwater. A certification by a registered professional engineer is required for the secondary containment and for any tank systems. Security that includes 24-hour controlled entry and warning signs for the facility must be provided.

A Phase I Site Assessment must be completed and filed within one year. This assessment establishes a baseline and evaluates whether there is existing contamination prior to the start of treatment operations. DTSC has developed a Tiered Permitting Phase I Environmental Assessment Checklist. The checklist enables owners/operators of facilities to identify potentially contaminated areas that require further investigation. If the assessment reveals areas where further investigation is necessary, the owner/operator must send to DTSC section I, the Signature and Certification Page and Area of Concern Data Sheets of the checklist. A schedule of further investigation must follow the submission within 90 days.

A Certificate of Financial Assurance must be filed by March 1 of the following year and updated annually. The owner/operator is required to estimate the closure cost for the treatment systems and provide a financial assurance mechanism, such as surety bond, closure insurance, certificate of deposit, etc. Owner/operators are exempt from providing a financial assurance mechanism if the cost of closure does not exceed $10,000. The closure cost must take into account the cost of:

- Removal, treatment, or disposal of waste
- Removal and disposal of contaminated soil
- Decontamination of equipment and structure
- Demolition and removal of containment system components or structure
- Transportation
- Sampling and analysis of waste, soil, equipment, and structure
- Certification or other demonstration of closure
- Other expenses (must be specified)
- Less assets (salvage value of waste, equipment, or property)

Permit by Rule (PBR)

A facility subject to PBR requirements must file a PBR notification form via CERS. The notification form is renewed annually, or sooner if significant changes occur.

Tanks or containers used during the treatment process are required to have secondary containment that is compatible with the waste, is free of cracks and leaks, prohibits contact with accumulated liquid (such as rainwater), and has sufficient capacity to contain the contents of the tank/container and possible rainwater. The facility must submit a signed statement from an independent, qualified professional engineer that the secondary containment meets the design requirements. Hazardous waste tank system requirements also apply when tanks are involved

The facility must be secure, with 24-hour controlled entry and warning signs posted.

A Phase I Site Assessment must be completed and filed within one year. DTSC has developed a Tiered Permitting Phase I Environmental Assessment Checklist. The checklist enables owners/operators of facilities to identify potentially contaminated areas that require further investigation. If the assessment reveals areas where further investigation is necessary, the owner/operator must send to DTSC section I, the Signature and Certification Page and Area of Concern Data Sheets of the checklist. A schedule of further investigation must follow the submission within 90 days.

A Certificate of Financial Assurance must be filed by March 1 of the following year and updated annually. The owner/operator is required to estimate the closure cost for the treatment systems and provide a financial assurance mechanism, such as surety bond, closure insurance, certificate of deposit, etc. Owners/operators are exempt from providing a financial assurance mechanism if the cost of closure does not exceed $10,000. The closure cost must take into account the cost of:

- Removal, treatment, or disposal of waste
- Removal and disposal of contaminated soil
- Decontamination of equipment and structure
- Demolition and removal of containment system components or structure
- Transportation
- Sampling and analysis of waste, soil, equipment, and structure
- Certification or other demonstration of closure
- Other expenses (must be specified)
- Less assets (salvage value of waste, equipment, or property)

In addition to the financial assurance, a written closure plan must be developed. The plan must explain how and when each unit will be closed, procedures for equipment decontamination, expected closure date (year), and the estimated time required to close each unit. Closure activities must be completed within 180 days of final treatment. Upon completion of closure, the owner/operator is to submit a certification of closure signed by the owner/operator and an independent, qualified professional engineer to the CUPA.

The owner/operator must keep a written inspection schedule and records noting inspection findings and maintenance actions. The record is to include date, name of inspector, observations, and specifics of repairs or corrective actions taken. Records must be kept and maintained on-site for three years. The inspections are to be conducted on operating equipment including safety, emergency, and security devices. The exterior of each treatment unit must be marked with the facility EPA ID number, serial number of the equipment, and name of the owner/operator.

A written waste analysis plan must be developed specifying the parameter of analysis, testing methods, frequency of analysis, and method to obtain representative samples.

G. EXEMPTIONS

Some forms of hazardous waste treatment are exempt from tiered permitting requirements under state and federal regulations.

Recycling Exemptions

Hazardous waste treatment is exempt from tiered permitting requirements when the material or waste is recycled according to the definitions of *used/reused* or *reclaimed* below. These materials can be recycled on-site by meeting one of these

regulations' definitions.[2]

Recycled: A material is recycled if it is used or reused or if it is reclaimed. Current policy allows a significant portion of water that is reclaimed from hazardous waste to qualify as being recycled.

To determine whether legitimate recycling, rather than sham recycling, is taking place, consider whether:

- The material is only marginally effective for the claimed use (less likely recycling)
- The material is similar to an analogous raw material or product (more likely recycling)
- The material adds significant value to the final product (more likely recycling)
- The secondary material has economic value comparable to the raw materials normally used (more likely recycling)
- There is a market for the end product (more likely recycling)
- The economics of using the material in the process make sense (more likely recycling)

Used/Reused: A material is used or reused if it is employed as either:

- An ingredient in a process to make a product; OR
- A substitute for a commercial product and is not reclaimed in the process

An example is when waste solvents from spray painting are reused for paintbrush cleaning. Another example is boiler cleaning material used as a hydrogen sulfide scrubber.

Reclaimed: A material is reclaimed if it is processed to recover a usable product or if it is regenerated (e.g., silver reclaimed from photography wastes or gold reclaimed from computer chips).

If a generator uses the on-site recycling exemption allowing treatment without a permit, the material must be:

- Recycled and used at the same facility at which the material was generated within 90 days of generation
- Managed in accordance with all applicable requirements for generators of hazardous wastes

Hazardous wastes capable of being recycled are called *recyclable materials*. In general, a hazardous waste may be excluded from classification as a waste under any of the following conditions:

- It is recycled and used at the site of generation;
- It is transported between locations operated by the same generator; AND/OR
- It is used or reused as an ingredient in an industrial process to make a product or as a substitute for a product and can be treated using any of the methods below (**NOTE**: Reclamation is not available for RCRA and non-RCRA hazardous wastes that will be used in a manner constituting disposal HSC §25143.2[e][1-2])
  - » Filtering
  - » Screening
  - » Sieving
  - » pH adjustment
  - » Gravity separation
  - » Grinding
  - » Sorting
  - » Viscosity adjustment

An example is waste sand blast with lead that is sold to a ceramics manufacturer who combines it with clay to make vases.

NOTE: Recycling exclusions and exemptions are found in HSC, Division 20, Chapter 6.5, §25143.2(b)(c)(d). Remember, excluded recyclable materials may still be hazardous substances, per HSC §25316, and so must be managed to comply with OSHA, DOT, APCD/AQMD, OES, and local requirements pertaining to hazardous materials.

If a material is to be managed as an excluded recyclable material, all of the following conditions must be met according to HSC §25243.9 and §25143.10:

- It must be placarded, labeled, and marked as required for hazardous waste, except the words "Excluded Recyclable Material" are used instead of "Hazardous Waste"
- The owner/operator must have a business

2. Excerpted from California Compliance School Student Workbook, California Environmental Protection Agency. Department of Toxic Substances Control, 1997. © DTSC, 1997

plan with Emergency Response Plan and contingency requirements for the material

- It must be stored and handled in accordance with local codes, including secondary containment for tanks
- DTSC and CUPA must be notified if the material is to be exported
- The material cannot be inherently waste-like, and the activity cannot be prohibited (e.g., used in a manner constituting disposal such as deposited on land, accumulated speculatively, burned for energy or used as a fuel) [HSC §25143.2(e)]
- The generator must keep records and provide specific exclusion and exemption information [HSC §25143.2(f)]
- The generator must comply with local agency notification requirements [HSC §25143.10]

The law allows recycled oil to be produced from used oil or from used oil that has been mixed with contaminated petroleum products or oil wastes. To meet the definition of *recycled oil*, the oil must come from a generator who lawfully recycles self-generated oil, a DTSC-authorized used oil recycling facility, or a used oil recycling facility in another state. Used oil cannot be mixed with contaminated petroleum products or oil wastes to achieve the recycled oil purity standards or the used oil PCB or halogen limits. It also prohibits DTSC from authorizing a process to mix used oil with one or more contaminated petroleum products or oily waste unless the recycled oil purity standards cannot be achieved solely by mixing.

A used oil recycling facility can mix used oil with a contaminated petroleum product or an oily waste (non-RCRA only) if the mixture is managed as a RCRA hazardous waste or the mixture is used to produce recycled oil at a DTSC-authorized used oil recycling facility. A generator or transporter can mix used oil with contaminated petroleum products if the mixture is managed in accordance with one of the recycling exclusions or exemptions [HSC §25143.2] or if:

- The mixture is managed as a RCRA hazardous waste;
- The mixture is not used to achieve the recycled oil purity standards or the used oil PCB or halogen limits; AND/OR
- Before used oil is mixed, the transporter tests the halogen content of the used oil to verify the halogen limit is not exceeded

California Tiered Permit Exemptions

State waste treatment exemptions are located in HSC §25123.5. The following are exemptions from the definition of *treatment* as long as heat, chemicals, or pressure are not added:

- Filtering of liquids
- Phase separation
- Evaporation of water

Examples of some of the other exemptions from tiered permitting requirements are:

- Solidification in a disposal container
- Silver and silver halide removal and recycling
- Benchtop treatment
- Oil and fuel filter draining and crushing

RCRA Waste Treatment Exemptions

Exemptions to treated RCRA hazardous wastes can be found in 40 CFR §261.4-261.7, 264.1, and 270.1. Some of the exemptions include:

- Non-solid wastes such as wastewater treatment discharges to POTW
- Elementary neutralization
- CESQG of RCRA hazardous waste

H. PROCESSING REQUIREMENTS FOR UNIVERSAL WASTE AEROSOL CONTAINERS

Senate Bill 1158 (October 3, 2001) amended HSC §25201.14 and added §25201.16 to make hazardous waste aerosol cans universal wastes. Previously, puncturing and draining aerosol cans required generators to obtain a tiered permit. This bill authorized a universal waste handler to remove and collect any contents of a universal waste aerosol can if the handler meets specified requirements. These requirements are as follows:

- Handlers must submit a specified notification to the Certified Unified Program Agency,

submitted in person or by certified mail with return receipt requested, that includes:

  - » Name, identification number, site address, mailing address, and telephone number of the handler
  - » Description of the universal waste aerosol can processing activities, including the type and estimated volumes or quantities of universal waste aerosol cans to be processed monthly, the treatment process or processes, equipment description, and design capacities
  - » Description of the characteristics and management of any hazardous treatment residuals

- The unit must be processed in a manner, and equipment designed, maintained, and operated, so as to prevent fire, explosion, and the unauthorized release of any universal waste or component of a universal waste to the environment
- The unit used to process the universal waste aerosol cans must be placed on or above a non-earthen floor, free of cracks or gaps, and sufficiently impervious and bermed to contain leaks and spills
- The processing operations must be performed safely by developing written operating procedures detailing the safe processing of universal waste aerosol cans; these procedures must specify:
  - » Type of equipment to process the cans safely
  - » Operation and maintenance of the unit
  - » Segregation of incompatible wastes
  - » Proper waste management techniques, including ensuring that flammable wastes are stored away from heat and open flame
  - » Waste characterization
- Cleanup kits must be readily available for spills or leaks
- Processing area must be properly ventilated
- Contents of the universal aerosol cans and/or materials from processing units must be transferred to appropriate containers and handled and managed in accordance with universal waste and/or hazardous waste management requirements
- The handler must have in place a training program using the written operating procedures required by these requirements, and each employee must be thoroughly familiar with procedures for sorting and processing the cans and proper waste handling and emergency procedures that are relevant to their responsibilities during normal facility operations and emergencies
- The contents processed from the cans must be properly characterized to determine whether they exhibit hazardous waste characteristics and then be managed accordingly
- An amended notification must be submitted within 30 days of any change in operation that modifies any of the information submitted in the original notification to the CUPA

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SECTION VIII: WASTE MINIMIZATION

A. POLLUTION PREVENTION & HAZARDOUS WASTE SOURCE REDUCTION

Source reduction is at the top of the waste minimization hierarchy and is preferred over recycling and treatment options because it is likely to pose the lowest environmental risk. Source reduction also avoids waste management costs and liability while contributing to a company's competitiveness.

The intent of source reduction is to promote the reduction of hazardous waste at its source.

Wherever source reduction is not feasible or practicable, recycling is encouraged. Where neither is feasible, the waste should be treated in a manner that minimizes the threat to public health and the environment.

Source reduction is defined as any action that causes a net reduction in the generation of hazardous waste and includes any steps taken before a hazardous waste is generated to lessen the properties that cause the waste to be classified as hazardous. The regulations identify the following five approaches to achieve source reduction:

1. Administrative steps include good operating practices. These include employee training, waste minimization policies, and inventory control.

2. Input changes include changes in raw materials/ feedstock to reduce, avoid, or eliminate the hazardous materials entering the production process, hence avoiding generation of hazardous wastes.

3. Operational improvements include activities such as loss prevention, waste segregation, production scheduling, maintenance operations, and overall site management.

4. Production changes include changes in production methods or techniques, equipment modifications, changes in process operating conditions (e.g., temperature, pressure), process or plant automation, or the return of materials or their components for reuse within existing processes.

5. Product reformulation includes changes in design, composition, or specifications of final or intermediate products.

B. SOURCE REDUCTION AND HAZARDOUS WASTE MANAGEMENT REVIEW ACT OF 1989 (SB 14)

The Source Reduction and Hazardous Waste Management Review Act of 1989 [HSC §25244.12 et. seq.], commonly called SB 14, requires hazardous waste generators to consider source reduction as the preferred method of managing hazardous waste. It promotes source reduction over recycling and treatment because it avoids the generation of hazardous wastes and its associated liability. The purpose of SB 14 is to:

- Reduce the generation of hazardous waste
- Reduce the release into the environment of chemical contaminants that have adverse and serious health or environmental effects
- Document hazardous waste management information and make that information available to state and local governments upon request

If a generator produces more than 12,000 kg (about 13.2 tons) of hazardous waste or 12 kg of extremely hazardous waste in a reporting year, SB 14 requires the generator to identify the major hazardous waste streams, evaluate source reduction opportunities, and prepare a Source Reduction Evaluation Review

and Plan (Plan), Hazardous Waste Management Performance Report (Performance Report), and Summary Progress Report (SPR) to document these efforts. The threshold not only applies to what is disposed of off-site; it also includes the amount of hazardous waste generated and treated on-site. Therefore, if a generator produces and disposes of and/or treats more than 12,000 kg/year or 3,100 gallons/year of hazardous waste or 12 kg/year or 3.1 gallons/year of extremely/acute hazardous waste, that generator is also subject to these requirements.

The Plan, Performance Report, and SPR are prepared once every four years and apply to waste production during the reporting year (2018 is a past reporting year, then 2022, etc.). The required Plan, Performance Report, and SPR must be completed by September 1 following the reporting year.

Who is Affected?

A generator becomes covered under SB 14 if producing qualifying hazardous waste at or above the thresholds during the reporting year. Preparation of the Plan, Performance Report, and/or SPR on a facility's efforts will be required if:

- The facility generates 12,000 kg/year (equivalent to 3,100 gallons) or more of hazardous waste or 12 kg/year (equivalent to 3.1 gallons) or more of extremely hazardous waste during the reporting year;
- The waste accounted for is routinely generated from ongoing operations—one-time waste streams such as demolition debris from decommissioning a production line and waste generated from remediation activities are excluded; AND/OR
- The facility produces more than 3,100 gallons/year of aqueous hazardous waste that is treated on-site and discharged to the sewer (the weight of the aqueous waste is determined before pretreatment and discharge to a sewer); this includes waste treated under a Pretreatment Permit issued pursuant to the Clean Water Act if the waste is hazardous before treatment

Several waste streams are exempt from the planning requirements. These waste streams include:

- Household hazardous waste, wastes from household collection events, and wastes separated at community landfills
- Motor vehicle fluids and filters
- Lead-acid batteries
- Infectious wastes
- Asbestos
- PCBs
- Site mitigation wastes, including remedial investigations
- Demolition wastes
- Waste pesticides and pesticide containers collected by county agricultural commissioners and wastes resulting from laboratory scale research activities
- Spent munitions and ordnance
- Decommissioned utility poles
- Oil generated from decommissioned refrigeration units
- Samples and evidence from enforcement actions
- Formation fluids and solids from oil, gas, and geothermal exploration and field development
- Waste generated from emergency response actions
- Waste generated from laboratory-scale research
- Medical wastes

Some recyclable materials are excluded from classification as a waste, provided the conditions in HSC §25143.2 are met. An example is silver-only photo-processing waste treated to remove silver for recycling/recovery. However, it should not be assumed that because an on-site tiered treatment permit is not required (i.e., hazardous waste is treated and a significant portion is reused on-site), that the facility is exempt from SB 14.

What is Required?

Generators subject to SB 14 must evaluate source reduction alternatives, set goals, and document the results in the Plan. The Plan covers the next four years, e.g., from 2019 through 2022 for the Plan due September 1, 2019. Generators must also document their accomplishments for the last four years, e.g., compare 2022 to 2018 in the Performance Report. If a generator was not subject to SB 14 during 2018 but is subject to SB 14 in 2022,

the "base" year or timeframe can be selected by the generator (i.e., any year from 2018 to 2022), but the Performance Report documenting efforts made in waste minimization must still be produced. This retrospective report should include discussions on recycling and treatment as well as source reduction. Small businesses that meet the California Government Code, Article 2, §11342.610 definition of a small business can use the DTSC Compliance Checklist for Complying with the Hazardous Waste Source Reduction Management Review Act of 1989 (Compliance Checklist). [*This document can be downloaded by visiting the NES EH&S resource repository at www.nesglobal.net/ehs-resources.*]

The third requirement is to complete the SPR, which is an extension of the Performance Report, concisely summarizing source reduction achievements and looking forward to future efforts to minimize hazardous waste production; as such, generators will have to prepare their Plan and Performance Report prior to beginning the SPR.

As of July 2012, as amended in SB 1018, submittal to DTSC of SB 14 documents is no longer required; however, generators must ensure the documents are prepared and available to DTSC and/or CUPA inspectors or upon request by the public.

If a generator acquires a site that is already subject to SB 14, the new owner must amend the source reduction documents within six months. If the new owner does not amend the source reduction documents, the existing documents, including the numerical goal and source reduction measures, apply to the site. In other words, the new owner is responsible for implementation of the selected measures according to the existing implementation schedule if a new Plan is not developed.

Small Business Option

Small businesses, as defined by the California Government Code §11342.610, that are subject to SB 14 must still comply, but they have several options instead of preparing the Plan. These include preparation of any of the following documents:

- Compliance Checklist
- Industry-specific waste audit study plus Sections 1, 3, 4, 5, and 6 from the Compliance Checklist
- Industry-specific Hazardous Waste Minimization Checklist and Assessment Manual plus Sections 1, 3, 4, 5, and 6 from the Compliance Checklist

A small business may find completing the Compliance Checklist or appropriate waste audit study easier to complete than preparing the Plan. The waste audit studies, Compliance Checklist, and available assessment manuals can be obtained from DTSC. There may not be a waste audit study performed on your industry, so check first before deciding on this option. As an alternative to the Performance Report, small businesses may use the most recent Biennial Generator Reports, as required by 22 CCR §66262.41, in place of the Performance Report. Small businesses are still required to complete the SPR by the deadline of September 1 following a reporting year.

What is in a Plan?

The Plan is to include the following elements:

- Name of the site, location of the site(s) including street address, city, county, and zip code, telephone number, and EPA ID number
- Description of the business including the type of business (include SIC code), general description of site operations with corresponding block diagrams focusing on quantity and types of raw materials, hazardous waste, and major products manufactured or services provided, number of employees, and sources of waste
- Quantity of hazardous waste generated during the prior four-year period and identification of major waste streams (> 5% of facility's total hazardous waste generation) by waste code
- Evaluation of potentially viable source reduction measures
- Goals and implementation schedule for selected measures for the upcoming four-year period
- Certifications of technical completeness and management review of financial implications

What is in a Performance Report?

The Performance Report is to include the following elements:

- Name and address
- Description of current waste management

practices

- Assessment of source reduction, recycling, and treatment measures implemented over the last four years (e.g., 2014-2017 for the 2018 reporting year)
- Comparison of waste generation from the prior plan coverage year to the current year (e.g., 2014 and 2018, respectively)

Following from the above example, if a generator was not subject to SB 14 in 2010, the generator can still use the waste information from 2014 or any other year including 2018. Choose a year for which substantial data is available on hazardous waste generation, on-site management, or off-site management.

What is in a Summary Progress Report?

The primary purpose of an SPR is to summarize source reduction strategies implemented during the last four years and to briefly describe projected source reduction measures to be implemented over the next four years. An SPR is a summary of the Plan and Performance Report that have been prepared. It is not an independent report or a report that is in lieu of either the Plan or Performance Report; it simply summarizes the information in these two source reduction documents. [*The Summary Progress Report form can be found on pages 61 – 62 in the DTSC Guidance Manual for Complying with the Hazardous Waste Source Reduction Management Review Act of 1989, which can be downloaded by visiting the NES EH&S resource repository at www.nesglobal.net/ehs-resources.*]

What Happens with the Documents?

The SB 14 documents must be on-site and readily available for an inspector to review. Copies of the documents must also be made available for public review.

If information in the Plan or Performance Report is of a confidential business nature, it may be protected from disclosure to the public. In this case, two sets of documents should be prepared, with the set with the trade secret information marked "Confidential Business Information." This set would be available only to authorized inspectors. The second set would have the confidential business information removed and would be made available to the public. This should not be a separate document; instead, it is the same document with only the pages/sections containing the trade secret information removed.

The law clearly states that DTSC is not to evaluate the appropriateness of any proposed source reduction measures. DTSC and CUPAs only determine whether the documents are complete and carried out according to the law. Failure to prepare proper documents can result in a fine.

As part of the generator inspection program, a CUPA or DTSC representative can ask to see your SB 14 documents to confirm that you have complied with the law.