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Gary Lucks JD, CPEA

Bay Law Group LLP
Compliance Assurance & Counseling

- 4 decades as EHS Attorney & Sustainability Advisor
- Certified Professional Environmental Auditor
- Author
- Adjunct Professor: Presidio Graduate School
- Policy Advisor: Newsom & Feinstein
- California Lawyer's Association, Environmental Law Section Sustainability Chair
- Bay Area AQMD Advisory Council
- Institute of Internal Auditors
- Sustainable Earth Initiative Cofounder

Disclaimer: This presentation is intended for informational purposes only. Content may not cover all relevant laws. Before acting on information contained in this presentation, the implications of the law should be independently evaluated considering the unique factual circumstances of the potentially affected facility, party, or entity.

510-290-5423
gary@beyondcompliance.net
www.beyondcompliance.net

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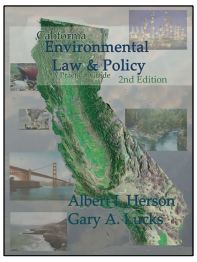

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Regulatory/Statutory Construction and Semantics

Toxic

Hazardous

Focus on applicability and exemption criteria

Focus on "terms of art" as defined

- "hazardous waste"
- "hazwoper"
- "hazcom"
- "hazardous material"
- "hazardous substance"
- "Extremely hazardous substance"
- "toxic waste"
- "solid waste"

"ignitable"
"flammable"
"owner"
"operator"
"oil"
"Major"

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Today's Objective:

Optimize Your
Sustainability Investment

As you strive for sustainability performance ensure you stay rooted in environmental compliance.

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Hazardous Waste Management Training

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Course Overview

1. Regulatory Overview
2. Hazardous Waste Characterization
3. Empty Containers
4. Used Oil
5. Hazardous Waste Management/Activities
6. Land Disposal Restrictions
7. Treated Waste Wood
8. Universal Waste
9. Treatment Storage and Disposal Facilities
10. Tiered Permitting
11. Polychlorinated Biphenyls (PCB's)
12. Medical Waste
13. Spill Prevention
14. Agency Findings and Fines
15. New Hazardous Waste Regulations/Legislation
16. Hazardous Materials Management – Storage and Compatibility
17. Hazardous Materials Legislation
18. Hazardous Materials Transportation Act

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California Resources

- **TRI/EPCRA/CERCLA/RMP/Oil Hotline**: (800) 424-9346
- **RCRA Hotline Now defunct! / replaced by RCRA online @** http://www.epa.gov/epawaste/inforesources/online/index.htm
- **DTSC Regulatory Assistance Office and Business Liaisons:** https://www.dtsc.ca.gov/ContactDTSC/Regulatory-Assistance-Officers.cfm
  - (800) 728-6942
  - Send email inquiries to: rao@dtsc.ca.gov

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Environmental Law is Statutory and Judicial

Environmental law includes the following:

- Statutes (federal & state)
- Regulations (federal, state, regional, and local)
- Local ordinances too
- Court decisions (federal & state)

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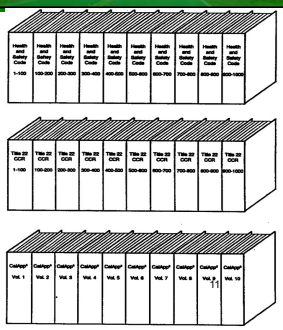
California State Laws

STATUTES:
- Health and Safety Code
- Public Resources Code
- Fish and Game Code
- Water Code

REGULATIONS:
CCR=California Code of Regulations
- Title 8 CCR Sect. 100
- Title 14 CCR Sect. 100
- Title 17 CCR Sect. 100
- Title 22 CCR Sect. 100
- Title 23 CCR Sect. 100
- Title 27 CCR Sect. 100

JUDICIAL OPINIONS:
- California Supreme Court=Cal
- California Appellate Court=CalApp[3]



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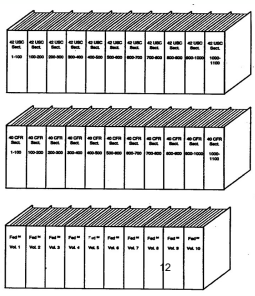
Federal Laws

STATUTES:
USC = UNITED STATES CODE
- 33 USC
- 42 USC

REGULATIONS:
- CFR = CODE OF FEDERAL REGULATIONS

JUDICIAL OPINIONS:
- UNITED SUPREME COURT
- FEDERAL REPORTER
- FEDERAL SUPPLEMENT



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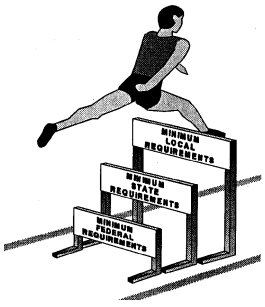
State & Local Laws Can be More Stringent than Federal Law



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Regulatory/Statutory Construction and Semantics

"SHALL" VERSUS "SHOULD"

"AND" VERSUS "OR"

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Hazardous Waste: Regulatory Overview

Why do these regulations exist?

Early Superfund sites were primarily hazardous waste management facilities.

- Love Canal
- Valley of the Drums

Valley of the Drums

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Hazardous Waste: Regulatory

Today, the problems remain, although on a different scale

- Midnight dumping
- Facilities unaware of regulations

Love Canal

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Love Canal

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Historical Hazardous Substances

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Poor Chemical Management

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Environmental Cleanup

Clean up contaminated environmental sites

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Regulatory Overview

- **Resource Conservation and Recovery Act (RCRA) Subtitle "C"**
- **RCRA** – (1976) 42 USC 6901 et seq. Subtitle C
- **Regulations** are promulgated in Title 40 Code of Federal Regulations (40 CFR Parts 260-280)
- **Enforced by U.S. EPA and states** that have received delegation to implement the federal program
- Includes programs other than hazardous waste (USTs, municipal, and medical waste)

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Regulatory Background

RCRA Subtitles

- Subtitle C - Hazardous Waste Management
- Subtitle D - Solid Waste Management
- Subtitle I - Underground Storage Tank

This training will address Subtitle C

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Regulations That Apply to Hazardous Waste Generators

- 40 CFR 260 - Hazardous Waste Management; General
- 40 CFR 261 - Identification and Listing of Hazardous Waste
- 40 CFR 262 - Generator Standards
- 40 CFR 263 - Transportation Standards
- 40 CFR 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities (TSDFs)
- 40 CFR 265 - Interim Status Standards for Owners & Operators of TSDFs

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Additional Hazardous Waste Regulations

- 40 CFR 266 - Specific Hazardous Waste
- 40 CFR 268 - Land Disposal Restrictions
- 40 CFR 270 - Hazardous Waste Permit Program
- 40 CFR 273 - Standards for Universal Waste
- 40 CFR 279 - Management of Used Oil
- 40 CFR 280 - Technical Standards for USTs

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Hazardous Waste Requirements

- **Waste Characterization**
- **Generator Regulations**
  - Satellite Accumulation Areas
  - Long-term Accumulation
  - Container/tank Management
  - Training
  - Inspections
  - Emergency Preparedness

- **Waste Transportation and Disposal**
- **Pollution Prevention**

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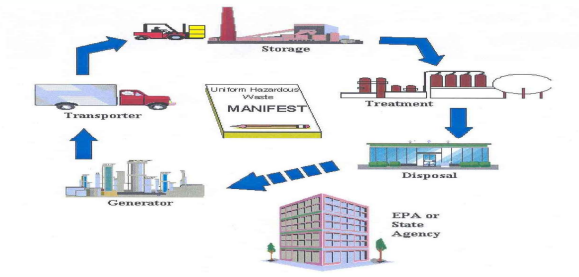
RCRA – "Cradle to Grave" Waste Management



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How do these two laws interact in California?

- Federal RCRA program delegated to "authorized" states
- State regulations may be more stringent
- U.S. EPA still implements some regulations until states are authorized
- U.S. EPA also retains authority for enforcement
- California is an authorized state
- Must comply with California regulations

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California Hazardous Waste Control Law (HWCL)

H&SC Section 25000 *et seq.* and "Title 22"

- HWCL first passed in 1977; amended many times
- Implemented and enforced by the Department of Toxic Substances control (DTSC)
- Regulations are codified in the California Code of Regulations (22 CCR 66260 *et seq.*)

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State Regulations may be more Stringent

Federal RCRA program delegated to California (8/1/92)

- U.S. EPA still implements some regulations until states are authorized
- U.S. EPA also retains authority for enforcement

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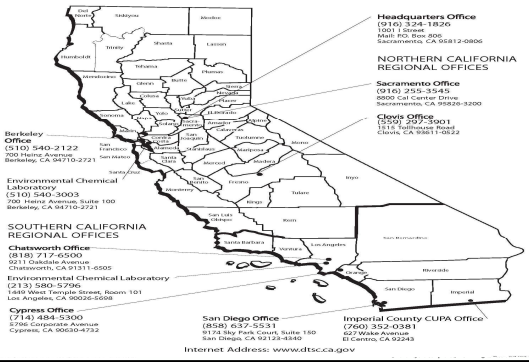
DTSC Offices



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Unified Hazardous Waste Program

See California Health & Safety Code Section 25404 *et seq*.

Merged together the following programs:

- Hazardous Waste Generators
- Tiered Permitting
- Underground Storage Tank Program
- Aboveground Storage Tank
- Hazardous Materials Management Program
- Risk Management Program

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Local Program Administration

Certified Unified Program Agency (CUPA) implements and enforces:

- Hazardous waste generator program, and
- Hazardous waste on-site treatment activities

County (fire or health department) may be the CUPA or other city departments

Several counties have multiple CUPAs within them

UNIFIED CERTIFICATION PROGRAM

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Hazardous Waste Requirements

- ❖ RCRA and HWCL establish different regulations for different types of hazardous waste handlers
  - ➢ Generators
  - ➢ Transporters
  - ➢ Treatment, storage, and disposal facilities (including recycling facilities) - known as TSDFs
- ❖ RCRA and HWCL both define which "wastes" are regulated

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What is a Hazardous Waste?

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Hazardous Waste Identification

Examples of "solid waste" that may be hazardous waste:

- Waste paint
- Expired shelf-life items that can no longer be used
- Used solvents too dirty to reuse
- Paint Chips and Used Sandblast Grit
- Spent Batteries

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Hazardous Waste Identification

Examples of activities that generate hazardous waste:

- Corrosion control operations that use chromate rust inhibitors
- Plating operations using cyanides
- Chemical and abrasive stripping of paint
- Painting operations for Aircraft, vehicle, & facility
  Photo and x-ray laboratories
- Used oil
- Wipes containing solvents
- Environmental & fuels laboratories

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Hazardous Waste Management Training

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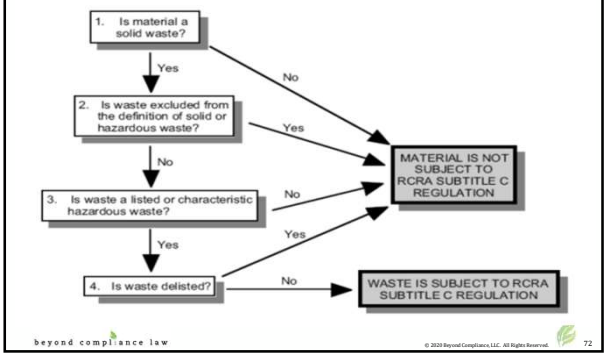
RCRA Hazardous Waste Identification Process



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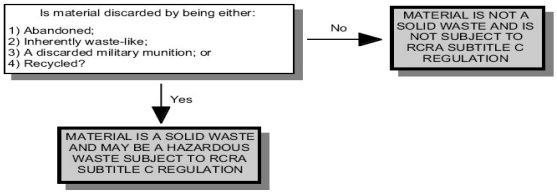
Definition of "Solid Waste", "Waste" or "Generic" Waste

Is the material a "Solid" Waste?

- Any discarded material that is **not excluded or subject to a variance** (40 CFR 261.2)
- **"Solid"** = liquid, semi - solid, solid, or gaseous



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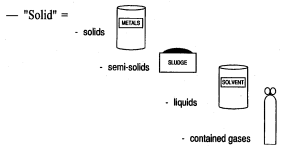
Hazardous Waste Determination

"Waste," as defined by 42 USC Section 1004 (27):

- **Any nonexempt discarded material**/Not a Product
- **"Solid"** = liquid, semisolid, solid, or contained gas
- **May use "process knowledge" or testing** (40 CFR 262.11)



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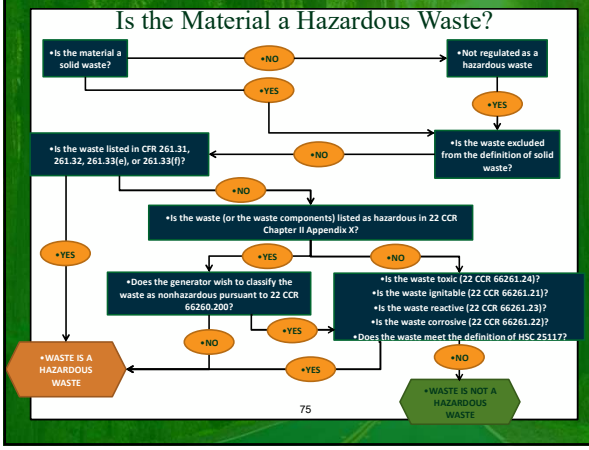
Is the Material a Hazardous Waste?



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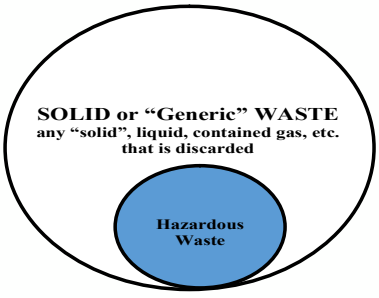
Hazardous Waste is a Subset of "Solid Waste"



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"Solid" Waste Determination

Solid Waste or "any" waste

- Discarded solid, liquid, semisolid or compressed gas
- Hazardous waste is subset of "any generic" waste
- Materials are **NOT** solid wastes unless:
  - Used in a manner constituting disposal,
  - Burned for energy recovery, or
  - Reclaimed before reuse

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Definition of "Solid Waste," "Waste," or "Any Generic" Waste

Is the material a "Solid Waste"?

- Any discarded material that is not excluded or subject to a variance (40 CFR 261.2)
- **"Solid"** = liquid, semi - solid, solid, or gaseous
- A "waste" is any discarded material that is not excluded under 22 CCR 66261.4 or Health & Safety Code Section 25143.2 (22 CCR 66261.2)
- **"Material"** = liquid, semi - solid, solid, or gaseous

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Hazardous Waste Exclusions/Exemptions

(40 CFR 261.4(a) *et seq.*)

- Domestic sewage (not recognized in CA)
- Industrial waste discharge subject to NPDES permits (only the discharge)
- Irrigation return flows
- NRC-regulated
- In-situ mining
- Household wastes (not recognized in CA)
- Mining overburden returned to the mine site

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Excluded Recyclable Materials: Method of Recycling

Recyclable material that is recycled by one of the following methods is not classified as a waste (H&SC §25143.2(b)):

- The material is used as an ingredient in an industrial process to make a product (if the material is not being reclaimed)
- The material is used as a safe and effective substitute for commercial products (if the material is not being reclaimed)
- The material is returned to the original process from which is was generated, without first being reclaimed, and used as a substitute for raw material feedstock
- Applies to both RCRA and non-RCRA hazardous waste

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Excluded Recyclable Materials: Non-RCRA Hazardous Waste

Non-RCRA hazardous wastes are excluded from classification as wastes if they meet any of the following conditions (H&SC §25143.2(d)):

- Specific types of recyclable materials that are managed in certain ways, such as:
- Petroleum refinery waste containing oil that is converted to (nonhazardous) petroleum coke at the facility where it was generated
- Oily waste, used oil, and spent nonhalogenated solvents that are either burned or recombined with normal process streams to produce fuel or other refined petroleum products, and meet certain other conditions
- CFC or HCFC compounds that are reused or recycled and used in heat transfer equipment or fire extinguishing products, or are contained within foam products
- Any recyclable material that is managed in specified ways, such as:
- Material that is recycled and used at the site where it was generated
- Material that is used or reused as an ingredient in an industrial process to make a product, if certain conditions are met

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Excluded Recyclable Materials Management

In order to be excluded from classification as wastes, recyclable materials must be managed according to certain standards (H&SC §25143.9):

- Held in a labeled container or tank
- Stored and handled in accordance with local ordinances
- Owner/operator of location must have a specified business plan
- Exporter to foreign country must meet certain requirements
- Excluded recyclable materials are managed as hazardous materials, rather than hazardous wastes
- Do not need a manifest
- Are not subject to 90-day accumulation periods
- Do not have to go to a TSDF
- Are not subject to Board of Equalization taxes
- Excluded recyclable materials are NOT excluded from the definition of hazardous substances in H&SC §25316(g)

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Hazardous Waste Determination

Hazardous Waste Overview: Characteristic vs. Listed

- Mixture Rule
- Derived-From Rule
- Contained-In Policy
- Type of Waste - determines:
  - Treatment and handling requirements (e.g., P wastes) and
  - Waste management options (e.g., land disposal restrictions)

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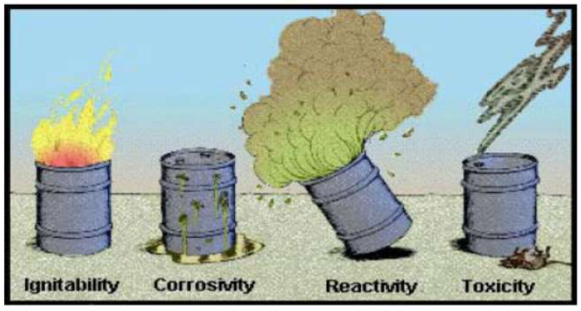
EPA Hazardous Waste Characteristics



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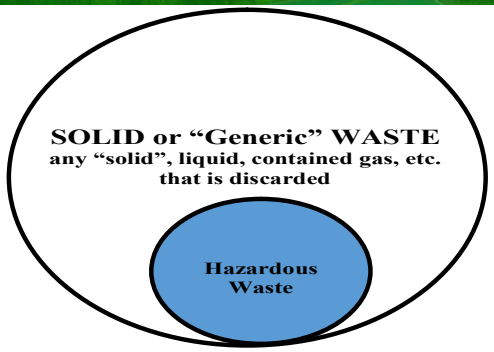
Hazardous Waste is a Subset of "Solid Waste"



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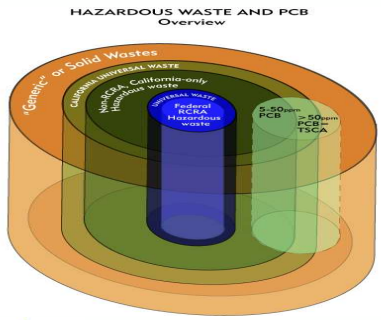
Comparing California & Federal Hazardous Waste



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Hazardous Waste Identification

- Is the "generic waste" (i.e., "ALL" waste) regulated as a "hazardous waste"?
  - Listed or characteristic,
  - Mixture rule
  - Derived from rule, and/or
  - An environmental medium contaminated with (or "containing") a hazardous waste (e.g., soil, groundwater).
- May use "process knowledge" or testing (40 CFR 262.11/22 CCR 66262.11))

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Examples of Characteristic Wastes

D001 - Ignitables:

- Alcohols used in lab
- Strong oxidizing cleaners in industrial settings

D002 - Corrosives:

- Acids used for sample preservation
- Sodium hypochlorite (pH ≥12.5)

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Examples of Characteristic Wastes

D003 - Reactive:

- Aerosol Cans (still containing propellant)
- Lithium Batteries
- Elemental Phosphorous

D009 - Toxic for Mercury:

- Fluorescent Bulbs
- Mercury Thermostats

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Hazardous Waste Identification

(40 CFR 261.21)

RCRA Characteristic Wastes:

Ignitability (D001)

- Liquids with flashpoints <140°F
- Solids capable of igniting under standard temperature and pressure
- Ignitable compressed gases
- Oxidizers

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Flammable Liquid Classification

Regulatory Classification				
EPA[a]	**OSHA[b]**		**DOT[c]**	**Flash Point**
D001 Ignitable Hazardous Waste Flash Pt < 140ºF	**Class IA Flammable Liquid:** Flash Pt ≤73ºF Boiling Point < 100ºF	**Class IB Flammable Liquid:** Flash Pt ≤73ºF Boiling Point ≥100ºF	**Packaging Group II** Flash Point < 73ºF	Less than 73ºF (23ºC)
	Class IC Flammable Liquid: Flash Pt >73ºF and < 100ºF		**Packaging Group III** Flash Point ≥ 73ºF and ≤ 141ºF	73ºF to 100ºF (23ºC to 37.8ºC)
	Class II Combustible Liquids Flash Point ≥ 100ºF and < 140ºF			100ºF to 140ºF (37.8ºC to 60ºC)
	Class IIIA Combustible Liquids Flash Point ≥ 140ºF and < 200ºF			140ºF to 200ºF (60.ºC to 93.3ºC)
Nonhazardous Waste Flash Point ≥ 140ºF			**Combustible Liquids for Bulk Packaging Only[d]** Flash Point > 141ºF and < 200ºF	141ºF to 200ºF (60.5ºC to 93.3ºC)
	Class IIIB Combustible Liquids Flash Point ≥ 200ºF		**Not Regulated by DOT:** Liquids with Flash Point ≥ 200ºF	Greater than 200ºF (93.3ºC)

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§66261.21. Characteristic of Ignitability.

(a) A waste exhibits the characteristic of ignitability if representative samples of the waste have any of the
following properties:
(1) it is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has
a flash point less than 60ºC (140ºF), 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 section 66260.11), or a Setaflash
Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see
section 66260.11), or as determined by an equivalent test method approved by the Department pursuant to section
66260.21;
(2) it 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;
(3) it is an ignitable compressed gas as defined in 49 CFR section 173.300 (as amended September 30,
1982) and as determined by the test methods described in that regulation or equivalent test methods approved by the
Department pursuant to section 66260.21;
(4) it is an oxidizer as defined in 49 CFR section 173.151 (as amended May 31, 1979).
(b) A waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

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Hazardous Waste Identification

(40 CFR 261.22/22 CCR 66261.22)

RCRA Characteristic Wastes:

Corrosivity (D002)

- Aqueous wastes with pH < or = 2 or > or = 12.5
- Liquid wastes that corrode steel at a rate >6.35 mm/year at 130° F
- California and federal definition are the same

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§66261.22. Characteristic of Corrosivity.

(a) A waste exhibits the characteristic of corrosivity if representative samples of the waste have any of the following properties:
(1) 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 EPA test method for pH or an equivalent test method approved by the Department pursuant to section 66260.21. The 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 section 66260.11);
(2) it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55ºC (130ºF) 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 section 66260.11) or an equivalent test method approved by the Department
pursuant to section 66260.21;
(3) it 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 section 66260.11) or an equivalent test method approved by the Department pursuant to 66260.21;
(4) it 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 (0.250 inch) per year at a test temperature of 55ºC (130ºF) 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 section 66260.11) or an equivalent test method approved by the Department pursuant to 66260.21.
(b) A waste that exhibits the characteristic of corrosivity specified in subsection (a)(1) or (a)(2) of this section has the EPA Hazardous Waste Number of D002.

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Hazardous Waste Identification

(40 CFR 261.23)

RCRA Characteristic Wastes:

Reactivity (D003)

- Normally unstable
- Reacts violently with water
- Forms explosive mixtures in water or generates toxic gases or fumes
- Cyanide- or sulfide-bearing wastes which generate toxic gases or fumes when exposed to pH conditions between 2-12.5
- Capable of detonation or explosive reaction

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§66261.23. Characteristic of Reactivity.

(a) A waste exhibits the characteristic of reactivity if representative samples of the waste have any of the
following properties:
(1) it is normally unstable and readily undergoes violent change without detonating;
(2) it reacts violently with water;
(3) it forms potentially explosive mixtures with water;
(4) when mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a
danger to human health or the environment;
(5) it is a cyanide or sulfide bearing waste which, 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;
(6) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated
under confinement;
(7) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and
pressure;
(8) it is a forbidden explosive as defined in 49 CFR section 173.51 (as amended April 20, 1987), or a Class
A explosive as defined in 49 CFR section 173.53 (as amended April 5, 1967) or a Class B explosive as defined in 49
CFR section 173.88 (as amended May 19, 1980).
(b) A waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

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§66261.24. Characteristic of Toxicity.

(a) A waste exhibits the characteristic of toxicity if representative samples of the waste have any of the
following properties:
(1) when using the Toxicity Characteristic Leaching Procedure (TCLP), test Method 1311 in "Test Methods
for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, third edition and Updates
(incorporated by reference in section 66260.11 of this division), the extracts from representative samples of the waste
contain any of the contaminants listed in Table I of this section 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 section 261.4. Where the waste contains less than 0.5
percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered
to be the extract for the purposes of this section;
(A) a waste that exhibits the characteristic of toxicity pursuant to subsection (a)(1) of this section has the
EPA Hazardous Waste Number specified in Table I of this section which corresponds to the toxic contaminant
causing it to be hazardous;
(B) Table I - Maximum Concentration of Contaminants for the Toxicity Characteristic:

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Hazardous Waste Identification

Maximum Concentration of Contaminants for the Toxicity Characteristic Leaching Procedure

Contaminant	EPA Hazardous Waste No.	CAS Number	Regulatory Limit (mg/l)
Arsenic	D004	7440-38-2	5.0
Barium	D005	7440-39-3	100.0
Benzene	D018	71-43-2	0.5
Cadmium	D006	7440-43-9	1.0
Carbon Tetrachloride	D019	56-23-5	0.5
Chlordane	D020	57-74-9	0.03
Chlorobenzene	D021	108-90-7	100.0
Chloroform	D022	67-66-3	6.0
Chromium	D007	7440-47-3	5.0
o-Cresol	D023	95-48-7	200.0
m-Cresol	D024	108-39-4	200.0
p-Cresol	D025	•95-48-7, 108-39-4, 106-44-5	200.0
Cresol	D026	*********	200.0
2,4-D Acid	D016	94-75-7	10.0
1,4-Dichlorobenzene	D027	106-46-7	7.5
1,2-Dichloroethane	D028	107-06-2	0.5

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Hazardous Waste Identification

1,1-Dichloroethylene	D029	75-35-4	0.7
2,4-Dinitrotoluene	D030	121-14-2	0.13
Endrin	D012	72-20-8	0.02
Heptachlor (and its epoxides)	D031	76-44-8	0.008
Hexachlorobenzene	D032	118-74-1	0.13
Hexachlorobutadiene	D033	87-68-3	0.5
Hexachloroethane	D034	67-72-1	3.0
Lead	D008	7439-92-1	5.0
Lindane	D013	58-89-9	0.4
Mercury	D009	7439-97-6	0.2
Methoxychlor	D014	72-43-5	10.0
Methyl Ethyl Ketone	D035	78-93-3	200.0
Nitrobenzene	D036	98-95-3	2.0
Pentrachlorophenol	D037	87-86-5	100.0
Pyridine	D038	110-86-1	5.0
Selenium	D010	7782-49-2	1.0
Silver	D011	7440-22-4	5.0
Tetrachloroethylene	D039	127-18-4	0.7
Toxaphene	D015	8001-35-2	0.5
Trichloroethylene	D040	79-01-6	0.5
2,4,5-Trichlorophenol	D041	95-95-4	400.0
2,4,6-Trichlorophenol	D042	88-06-2	2.0
2,4,5-TP (Silvex)	D017	93-72-1	1.0
Vinyl Chloride	D043	75-01-4	0.2

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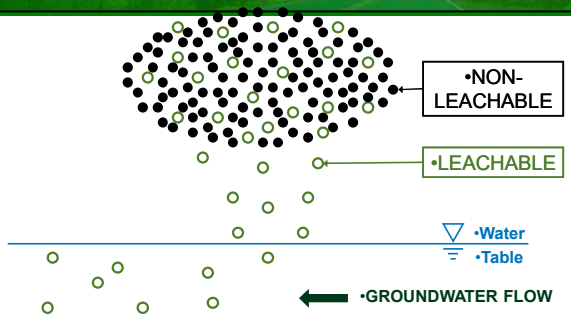
The Leachable / Mobile Fraction Threatens Groundwater



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Hazardous Waste Label

This part is very important

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Federal Hazardous Waste Labeling/Marking

Containers of hazardous waste must/should be labeled with the following information:

1. Accumulation start date (required in California)
2. The words "hazardous waste" (required)
3. NEW Hazardous properties of the waste
   - Ignitable corrosive, reactive, toxic) or
   - Hazard communication in line with DOT or
   - Hazardous pictogram (GHS or NFPA)
1. Composition and physical state of the waste (recommended)
2. Name and address of the generator (DOT shipping requirement)

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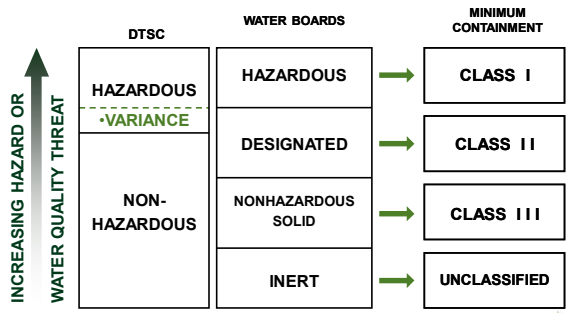
California Waste and Unit Classifications



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Hazardous Waste Identification

Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC); See 22 CCR Section 66261.24

- Identifies wastes that exhibit characteristic of toxicity
- Wastes containing concentrations equal to or exceeding its listed TTLC is a hazardous waste
- Wastes containing concentrations equal to or exceeding its listed STLC is a hazardous waste
- Acute oral LD 50 less than 5,000 mg/kg

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Hazardous Waste Determination

Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC); See 22 CCR Section 66261.24

- Identifies wastes that exhibit characteristic of toxicity
- Addresses persistent and bioaccumulative toxic substances in hazardous wastes
- Wastes containing concentrations equal to or exceeding its listed TTLC is a hazardous waste
- Wastes containing concentrations equal to or exceeding its listed STLC is a hazardous waste
- Other toxicity test may apply

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Hazardous Waste Identification

Toxicity continued:

- Acute Dermal LD 50 less than 4300 mg/kg
- Acute Inhalation LC 50 less than 10,000 ppm (gas or vapor)
- Acute aquatic 96-hour LC 50 less than 500 mg/L
- Addresses persistent and bioaccumulative toxic substances in hazardous wastes (0.001 % by weight) (e.g., vinyl chloride)

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HAZARDOUS WASTE IDENTIFICATION

List of Inorganic STLC, TTLC

Substances	STLC (mg/L)	TTLC Wet-Weight (mg/kg)
Antimony and/or Antimony Compounds	15	500
Arsenic and/or Arsenic Compounds	5.0	500
Asbestos		1.0 (as percent)
Barium and/or Barium Compounds (Excluding	100	10,000*
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[b]	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
Nickel and/or Nickel Compounds	20	2,000
Selenium and/or Selenium Compounds	1.0	100
Silver and/or Silver Compounds	5	500
Thallium and/or Thallium Compounds	7.0	700
Vanadium and/or Vandium Compounds	24	2,400
Zinc and/or Zinc Compounds	250	5,0000

* Excluding barium sulfate
[b] If the soluble chromium is less than 5 mg/L, and the soluble chromium equals or exceeds 560 mg/L and the waste is not otherwise identified as a RCRA hazardous waste pursuant to Section 66262.100, then the waste is a non-RCRA hazardous waste.

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BRIEF COMPARISON OF FEDERAL VS. CALIFORNIA CLASSIFICATION SCHEMES

California		Federal
CalEPA Department of Toxic Substances Control	Agency	Environmental Protection Agency
Hazardous Waste Control Law Hazardous Substances Account Act Hazardous Substance Cleanup Bond Act of 1984	Law	RCRA, HSWA CERCLA, SARA TSCA
22 CCR Division 4.5	Regs	40 CFR Parts 124, 260-280
HSC § 25117	Definition	RCRA 1004 (5); 40 CFR 261.4 exclusions
1. Ignitability 2. Corrosivity a) liquid b) solid 3. Reactivity 4. Toxicity a) STLC 19 inorganics 20 organics (14g) using the Waste Extraction Test b) TTLC 20 inorganics 16 organics c) acute oral LD_{50} d) acute inhalation LC_{50} e) acute dermal LD_{50} f) aquatic 96-hour LC_{50} g) 16 carcinogen at 0.001% h) "generic clause" i) used oil j) PCB >=50 ppm	CHARACTERISTICS	1. Ignitability 2. Corrosivity a) liquid b) solid 3. Reactivity 4. TCLP a) 9 inorganics b) 31 organics
Referenced in 22 CCR Chapter 11 Article 4	Lists	F,K,P,U.
RCRA Hazardous Waste Extremely Hazardous Waste non-RCRA Hazardous Waste Special Waste	Categories	Hazardous Waste Acute Hazardous Waste
22 CCR § 66260.210	Variance	40 CFR 260.20; 260.22

CCR= California Code of Regulations
HSC = California Health and Safety Code
STLC = Soluble Threshold Limit Concentration
TTLC = Total Threshold Limit Concentration
RCRA = Resource Conservation and Recovery Act
CFR = Code of Federal Regulations
TCLP = Toxicity Characteristic Leaching Procedure

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Hazardous Waste Identification

Examples of characteristic wastes:

- Spent organic solvent residues (e.g., mineral spirits from parts cleaning) = **ignitable**
- Parts cleaning operations using highly alkaline cleaning solutions = **corrosive**
- Paint strippers = **corrosive**
- Acidic wastes from electroless metal plating lines = **corrosive**
- Electrolyte solutions (**acidic** or **caustic**) from batteries
- Non-empty aerosol cans (due to propellant) = **reactive** or **ignitable**

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Hazardous Waste Identification

Examples of characteristic wastes:

- Electrolyte solutions (**acidic** or **caustic**) from batteries
- Lithium-sulfur dioxide batteries = **reactive**
- Non-empty aerosol cans (due to propellant) = **reactive** or **ignitable**

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Hazardous Waste Identification

Listed hazardous waste:

- **F Wastes**: Non-industry specific waste sources ***(from processes)***
- **K Wastes**: Industry specific waste sources ***(from processes)***
- **U & P Wastes**: Commercial chemical products ***(not from a process)***

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Hazardous Waste Identification
(40 CFR Section 261.31)

RCRA Listed Wastes

"F" wastes are from nonspecific sources:

- Spent solvents and solvent mixtures
- Certain wastes from electroplating and metal heat treating operations
- Dioxin-containing wastes

Spent chlorinated solvents used for degreasing that have the F001 code:

- Trichloroethylene,
- 1,1,-Trichloroethane,
- Tetrachloroethylene,
- Methylene Chloride,
- Carbon Tetrachloride, and
- Chlorinated Fluorocarbons (Freons)

Same chlorinated solvents used for any other purpose are F002

- **Example**: methylene chloride used as a paint stripper

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Hazardous Waste Identification

Spent nonhalogenated solvents are also F-listed hazardous wastes:

- F003: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohlol, cyclohexanone, and methanol;
- F004: cresols, cresylic acid, and nitrobenzene,
- F005: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane

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Hazardous Waste Identification

Examples of F-listed Wastes

- Spent solvents used for cleaning/degreasing that contain materials such as MEK and trichloroethane (F005)
- Paint wastes, including thinners and paint strippers (F002),
- Spent cyanide solution from electroplating operations (F007)
- Wastewater treatment sludge from electroplating operations (F006)
- Spent cyanide plating baths (F007)

F-Listed Solvent Rags:

- F001 - Trichloroethylene used in Degreasing
- F002 - Trichloroethylene used in other operations
- F003 - Xylene, acetone, methanol, etc..
- F005 - Methyl ethyl ketone, toluene, etc..

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Spent solvents (F001 – F005)

F001 These spent halogenated solvents used in degreasing; spent solvent mixtures used in degreasing containing, before use, a total of 10 percent or more by volume of these solvents or the solvents listed in F002, F004, or F00 and still bottoms from the reclamation of these spent solvent and spent solvent mixtures used in degreasing. (T)[1]

- carbon tetrachloride
- chlorinated fluorocarbons
- methylene chloride
- tetrachloroethylene, also called perchloroethylene
- 1,1,1-trichloroethane
- trichloroethylene, also called 'TCE'

F002 These spent halogenated solvents; spent solvent mixtures containing, before use, a total of 10 percent or more by volume of these solvents or the solvents listed in F001, F004, or F005, and still bottoms from the reclamation of these spent solvent and spent solvent mixtures. (T)[1]

- chlorobenzene
- methylene chloride
- ortho-dichlorobenzene
- tetrachloroethylene, also called 'perchloroethylene'
- 1,1,1-trichloroethane
- 1,1,2-trichloroethane
- trichloroethylene, also called 'TCE'
- trichlorofluoromethane
- 1,1,2-trichloro-1,2,2-trifluoroethane

F003 These spent non-halogenated solvents; spent solvent mixtures containing, before use, either only these non-halogenated solvents, or one or more of these non-halogenated solvents and a total of 10 percent or more by volume of the solvents listed in F001, F002, F004, or F005, and still bottoms from the reclamation of these spent solvent and spent solvent mixtures. (I)[1,2]

- acetone
- cyclohexane
- ethyl acetate
- ethyl benzene
- ethyl ether
- methanol
- methyl isobutyl ketone
- n-butyl alcohol
- xylene

F004 These spent non-halogenated solvents; spent solvent mixtures containing, before use, a total of 10 percent or more by volume of these solvents or the solvents listed in F001, F002, or F005, and still bottoms from the reclamation of these spent solvent and spent solvent mixtures. (T)[1]

- cresols and cresylic acid
- nitrobenzene

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F005 These spent non-halogenated solvents; spent solvent mixtures containing, before use, a total of 10 percent or more by volume of these solvents or the solvents listed in F001, F002, or F004, and still bottoms from the reclamation of these spent solvent and spent solvent mixtures. (I,T)[1]

- benzene
- carbon disulfide
- 2-ethoxyethanol
- isobutanol
- methyl ethyl ketone, also called 'MEK'
- 2-nitropropane
- Pyridine
- toluene

Metal treating (F006-F012 and F019)

F006 All wastewater treatment sludges from electroplating operations except those from these processes. However, these sludges may still be hazardous for a hazardous waste characteristic. (T)

- sulfuric acid anodizing of aluminum
- tin plating of carbon steel
- zinc plating (segregated basis) on carbon steel
- aluminum or zinc aluminum plating on carbon steel
- cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel
- chemical etching and milling of aluminum

F007 Spent cyanide plating bath solutions from electroplating operations. (R,T)

F008 Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process. (R,T)[3]

F009 Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process. Sludges formed in electroplating stripping and cleaning bath solution tanks where cyanides are used in the process are also included. (R,T)[3]

F010 Quenching bath residues from oil baths from metal heat-treating operations where cyanides are used in the process. (R,T)[3]

F011 Spent cyanide solutions from salt bath pot cleaning from metal heat-treating operations. (R,T)

F012 Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process. (R,T)[3]

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)[4]

Manufacturing and processing (F020-F026)

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 tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (H)[5,6]

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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)[5]

F022 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzer under alkaline conditions. (H)[5]

F023 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (H)[5,7]

F024 Process wastes from the production of chlorinated aliphatic hydrocarbons with carbon chain lengths from one through five by free radical catalyzed processes, with any amount and position of chlorine substitution. Process wastes include but are not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, but do not include F025 wastes. (T)[8]

F025 Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of chlorinatec aliphatic hydrocarbons with carbon chain lengths from one through five by free radical catalyzed processes, wit any amount and position 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)[5]

Discarded unused products (F027)

F027 Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (H)[5,9]

F027 includes, but is not limited to:	CAS Registry #
• Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5
• Pentachlorophenol *or* Phenol, pentachloro-	87-86-5
• Phenol, 2,3,4,6-tetrachloro-	58-90-2
• Phenol, 2,4,5-trichloro-	95-95-4
• Phenol, 2,4,6-trichloro-	88-06-2
• Silvex (2,4,5-TP) *or* Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	93-72-1
• 2,4,5-T	93-76-5
• 2,3,4,6-Tetrachlorophenol	58-90-2
• 2,4,5-Trichlorophenol	95-95-4
• 2,4,6-Trichlorophenol	88-06-2

Contaminated soil treatment residues (F028)

F028 Residues resulting from the incineration or thermal treatment of soil contaminated with hazardous waste codes F020, F021, F022, F023, F026, and F027. (T)

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Wood preserving (F032-F035)

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. (T)[10,11]

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. (T)[11]

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. (T)[11]

Petroleum refinery (F037-F038)

F037 Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or 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. This listing includes residuals generated from processing or recycling oil-bearing hazardous secondary materials excluded in another state under 40 CFR 261.4(a)(12)(i) imported for processing into Minnesota, if those residuals are to be disposed of. (T)[12,13]

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 in DAF units. (T)[12,14]

Landfill leachate (F039)

F039 Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste listed as a F-, K-, P- or U-listed hazardous waste. Leachate resulting from the disposal of one or more hazardous wastes bearing the following waste codes which is not mixed with any other hazardous wastes retains its original codes and is not F039: F020, F021, F022, F026, F027, and F028. (T)

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Hazardous Waste Identification

RCRA Listed Wastes

"K" wastes from specific sources

- Wood preservation
- Inorganic pigments
- Organic/inorganic chemicals
- Pesticides
- Petroleum refining
- Veterinary pharmaceuticals

40 CFR Section 261.32

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Wood preservation K001

K001 Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol. (T)

Inorganic pigments K002-K008

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)

K004 Wastewater treatment sludge from the production of zinc yellow pigments. (T)

K005 Wastewater treatment sludge from the production of chrome green pigments. (T)

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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-K011, K013-K030, K083, K085, K093-K096, K103-K105, K107-K118, K136, K149-K151, K156-K159, K161, K174-K175, and K181**

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 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 methy 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)
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. (T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene. (T)

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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-dimethylhydrazine (UDMH) from carboxylic acid hydrazines. (C,T)
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of1,1-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-dimethylhydrazine (UDMH) from carboxylic acid hydrazides. (T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene. (C,T)
K112	Reaction by-product 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 diisocyanate via phosgenation of toluenediamine. (T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene. (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. (T)[1]
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)

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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. (T)[2]
K157	Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes. (T)[2]
K158	Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes. (T)[2]
K159	Organics from the treatment of thiocarbamate wastes. (T)
K161	Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust and floor sweepings from the production of dithiocarbamate acids and their salts. (R,T)[3]
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). (T)[4]
K175	Wastewater treatment sludges from the production of vinyl chloride monomer using mercuric chloride catalyst in an acetylene-based process. (T)
K181	Nonwastewaters from the production of dyes and/or pigments (including nonwastewaters commingled at the point of generation with nonwastewaters from other processes) that, at the point of generation, contain mass loadings of any of the constituents identified in 40 CFR 261.32(e) at or above the specified levels after any annual mass loading limit has been reached. (T)[5]

norganic chemicals — **K071, K073, K106, and K176-K178**

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)
K176	Baghouse filters from the production of antimony oxide, including filters from the production of intermediates (e.g., antimony metal or crude antimony oxide). (E)
K177	Slag from the production of antimony oxide that is speculatively accumulated or disposed, including slag from the production of intermediates (e.g., antimony metal or crude antimony oxide). (T)
K178	Residues from manufacturing and manufacturing-site storage of ferric chloride from acids formed during the production of titanium dioxide using the chloride-ilmenite process. (T)

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Pesticides K031-K043, K097-K099, K123-K126, and K131-K1

K031	By-product salts generated in the production of MSMA and cacodylic acid. (T)
K032	Wastewater treatment sludge from the production of chlordane. (T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane. (T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene 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 diethylphosphorodithioic 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 supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt. (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-K047

K044	Wastewater treatment sludges from the manufacturing and processing of explosives. (R)[6]
K045	Spent carbon from the treatment of wastewater containing explosives. (R)[6]

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K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds. (T)
K047	Pink/red water from TNT operations. (R)[6]

Petroleum refining K048-K052 and K169-K172

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. (R)[7]
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. (I,T)[8]
K172	Spent Hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors. (I,T)[8]

Iron and steel K061-K062

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)

Non-ferrous metals: primary aluminum and secondary lead K088, K069, and K100

K088	Spent potliners from primary aluminum reduction. (T)
K069	Emission control dust/sludge from secondary lead smelting. (T)[9]
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting. (T)

Veterinary pharmaceuticals K084 and K101-K102

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)

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Ink formulation and steel K086

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, dyes, driers, soaps, and stabilizers containing chromium and lead. (T)

Coking K060, K087, K141-K145, and K147-K148

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. (T)
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products 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 by-products 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 by-products produced from coal. (T)
K145	Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal. (T)
K147	Tar storage tank residues from coal tar refining. (T)
K148	Residues from coal tar distillation, including but not limited to, still bottoms. (T)

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P-list table

Waste code	CAS registry #	Generic listed name	Listing reason
P002	591-08-2	1-Acetyl-2-thiourea	H
P003	107-02-8	Acrolein	H
P070	116-06-3	Aldicarb	H
P203	1646-88-4	Aldicarb sulfone	H
P004	309-00-2	Aldrin	H
P005	107-18-6	Allyl alcohol	H
P006	20859-73-8	Aluminum phosphide	R, T
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol	H
P008	504-24-5	4-Aminopyridine	H
P009	131-74-8	Ammonium picrate	R
P119	7803-55-6	Ammonium vanadate	H
P010	7778-39-4	Arsenic acid H_3AsO_4	H
P011	1303-28-2	Arsenic pentoxide	H
P012	1327-53-3	Arsenic trioxide	H
P054	151-56-4	Aziridine	H
P067	75-55-8	Aziridine, 2-methyl-	H
P013	542-62-1	Barium cyanide	H
P028	100-44-7	Benzyl chloride	H
P015	7440-41-7	Beryllium powder	H
P017	598-31-2	Bromoacetone	H
P018	357-57-3	Brucine	H
P021	592-01-8	Calcium cyanide	H
P127	1563-66-2	Carbofuran	H
P022	75-15-0	Carbon disulfide	H
P189	55285-14-8	Carbosulfan	H
P023	107-20-0	Chloroacetaldehyde	H
P024	106-47-8	p-Chloroaniline	H
P029	544-92-3	Copper cyanide	H
P030	----------	Cyanides (soluble cyanide salts), not otherwise specified	H
P031	460-19-5	Cyanogen	H
P033	506-77-4	Cyanogen chloride	H
P016	542-88-1	Dichloromethyl ether	H
P036	696-28-6	Dichlorophenylarsine	H
P037	60-57-1	Dieldrin	H
P038	692-42-2	Diethylarsine	H
P043	55-91-4	Diisopropylfluorophosphate (DFP)	H
P044	60-51-5	Dimethoate	H
P191	644-64-4	Dimetilan	H
P020	88-85-7	Dinoseb	H
P039	298-04-4	Disulfoton	H
P049	541-53-7	Dithiobiuret	H
P050	115-29-7	Endosulfan	H
P088	145-73-3	Endothall	H
P051	72-20-8	Endrin & metabolites	H
P042	51-43-4	Epinephrine	H

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Waste code	CAS registry #	Generic listed name	Listin reaso
P097	52-85-7	Famphur	H
P056	7782-41-4	Fluorine	H
P057	640-19-7	Fluoroacetamide	H
P058	62-74-8	Fluoroacetic acid, sodium salt	H
P198	23422-53-9	Formetanate hydrochloride	H
P197	17702-57-7	Formparanate	H
P059	76-44-8	Heptachlor	H
P062	757-58-4	Hexaethyl tetraphosphate	H
P116	79-19-6	Hydrazinecarbothioamide	H
P063	74-90-8	Hydrogen cyanide	H
P060	465-73-6	Isodrin	H
P192	119-38-0	Isolan	H
P196	15339-36-3	Manganese dimethyldithiocarbamate	H
P065	628-86-4	Mercury fulminate	R, T
P199	2032-65-7	Methiocarb.	H
P066	16752-77-5	Methomyl	H
P068	60-34-4	Methyl hydrazine	H
P064	624-83-9	Methyl isocyanate	H
P071	298-00-0	Methyl parathion	H
P190	1129-41-5	Metolcarb	H
P128	315-8-4	Mexacarbate	H
P073	13463-39-3	Nickel carbonyl	H
P074	557-19-7	Nickel cyanide	H
P075	54-11-5	Nicotine & salts	H
P076	10102-43-9	Nitric oxide	H
P077	100-01-6	p-Nitroaniline	H
P078	10102-44-0	Nitrogen dioxide	H
P081	55-63-0	Nitroglycerine	R
P082	62-75-9	N-Nitrosodimethylamine	H
P084	4549-40-0	N-Nitrosomethylvinylamine	H
P085	152-16-9	Octamethylpyrophosphoramide	H
P087	20816-12-0	Osmium tetroxide	H
P194	23135-22-0	Oxamyl	H
P089	56-38-2	Parathion	H
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-	H
P048	51-28-5	Phenol, 2,4-dinitro-	H
P047	534-52-1	Phenol, 2-methyl-4,6-dinitro- & salts	H
P202	64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate	H
P046	122-09-8	Phenternine	H
P092	62-38-4	Phenylmercury acetate	H
P093	103-85-5	Phenylthiourea	H
P094	298-02-2	Phorate	H
P095	75-44-5	Phosgene	H
P096	7803-51-2	Phosphine	H
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester	H
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	H

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Waste code	CAS registry #	Generic listed name	Listing reasor
P204	57-47-6	Physostigmine	H
P188	57-64-7	Physostigmine salicylate	H
P098	151-50-8	Potassium cyanide	H
P099	506-61-6	Potassium silver cyanide	H
P201	2631-37-0	Promecarb	H
P101	107-12-0	Propanenitrile	H
P027	542-76-7	Propanenitrile, 3-chloro-	H
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-	H
P102	107-19-7	Propargyl alcohol	H
P103	630-10-4	Selenourea	H
P104	506-64-9	Silver cyanide	H
P105	26628-22-8	Sodium azide	H
P106	143-33-9	Sodium cyanide	H
P108	57-24-9	Strychnine & salts	H
P109	3689-24-5	Tetraethyldithiopyrophosphate	H
P110	78-00-2	Tetraethyl lead	H
P111	107-49-3	Tetraethyl pyrophosphate	H
P112	509-14-8	Tetranitromethane	R
P113	1314-32-5	Thallic oxide	H
P114	12039-52-0	Thallium(I) selenite	H
P115	7446-18-6	Thallium(I) sulfate	H
P045	39196-18-4	Thiofanox	H
P014	108-98-5	Thiophenol	H
P026	5344-82-1	Thiourea, (2-chlorophenyl)-	H
P072	86-88-4	Thiourea, 1-naphthalenyl-	H
P185	26419-73-8	Tirpate	H
P123	8001-35-2	Toxaphene	H
P118	75-70-7	Trichloromethanethiol	H
P120	1314-62-1	Vanadium pentoxide	H
P001	81-81-2	Warfarin & salts, when present at concentrations > 0.3%	H
P121	557-21-1	Zinc cyanide	H
P122	1314-84-7	Zinc phosphide Zn_3P_2, when present at concentrations > 10%	R, T
P205	137-30-4	Ziram	H

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U List

Waste code	CAS Registry #	Generic name	Reason
U394	30558–43–1	A2213	(T)
U001	75–07–0	Acetaldehyde	(I)[1]
U034	75–87–6	Acetaldehyde, trichloro-	(T)
U187	62–44–2	Acetamide, N-(4-ethoxyphenyl)-	(T)
U005	53–96–3	Acetamide, N-9H-fluoren-2-yl-	(T)
U240	94–75–7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters	(T)[2]
U112	141–78–6	Acetic acid ethyl ester	(I)[1]
U144	301–04–2	Acetic acid, lead(2+) salt	(T)
U214	563–68–8	Acetic acid, thallium(1+) salt	(T)
U002	67–64–1	Acetone	(I)[1]
U003	75–05–8	Acetonitrile	(I,T)
U004	98–86–2	Acetophenone	(T)
U005	53–96–3	2-Acetylaminofluorene	(T)
U006	75–36–5	Acetyl chloride	(C,R,T)
U007	79–06–1	Acrylamide	(T)
U008	79–10–7	Acrylic acid	(I)[1]
U009	107–13–1	Acrylonitrile	(T)
U011	61–82–5	Amitrole	(T)
U012	62–53–3	Aniline	(I,T)
U136	75-60-5	Arsinic acid, dimethyl-	(T)
U014	492-80-8	Auramine	(T)
U015	115-02-6	Azaserine	(T)

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Waste code	CAS Registry #	Generic name	Reason
U010	50-07-7	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-(1aalpha, 8beta,8aalpha,8balpha)]-	(T)
U280	101-27-9	Barban	(T)
U278	22781-23-3	Bendiocarb	(T)
U364	22961-82-6	Bendiocarb phenol	(T)
U271	17804-35-2	Benomyl	(T)
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	(T)
U016	225-51-4	Benz[c]acridine	(T)
U017	98-87-3	Benzal chloride	(T)
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	(T)
U018	56-55-3	Benz[a]anthracene	(T)
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	(T)
U012	62-53-3	Benzenamine	(I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-	(T)
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride	(T)
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	(T)
U328	95-53-4	Benzenamine, 2-methyl-	(T)
U353	106-49-0	Benzenamine, 4-methyl-	(T)
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-	(T)
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride	(T)
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-	(T)
U019	71-43-2	Benzene	(I,T)[3]
U038	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester	(T)
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-	(T)
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-	(T)
U037	108-90-7	Benzene, chloro-	(T)
U221	25376-45-8	Benzenediamine, ar-methyl-	(T)
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	(T)
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	(T)
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	(T)
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	(T)
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	(T)
U070	95-50-1	Benzene, 1,2-dichloro-	(T)
U071	541-73-1	Benzene, 1,3-dichloro-	(T)
U072	106-46-7	Benzene, 1,4-dichloro-	(T)

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Waste code	CAS Registry #	Generic name	Reason
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	(T)
U017	98-87-3	Benzene, (dichloromethyl)-	(T)
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl-	(R,T)
U239	1330-20-7	Benzene, dimethyl-	(I)[1]
U201	108-46-3	1,3-Benzenediol	(T)
U127	118-74-1	Benzene, hexachloro-	(T)
U056	110-82-7	Benzene, hexahydro-	(I)[1]
U220	108-88-3	Benzene, methyl-	(T)
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-	(T)
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-	(T)
U055	98-82-8	Benzene, (1-methylethyl)-	(I)1
U169	98-95-3	Benzene, nitro-	(T)
U183	608-93-5	Benzene, pentachloro-	(T)
U185	82-68-8	Benzene, pentachloronitro-	(T)
U020	98-09-9	Benzenesulfonic acid chloride	(C,R)[4]
U020	98-09-9	Benzenesulfonyl chloride	(C,R)[4]
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-	(T)
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	(T)
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4- methoxy-	(T)
U023	98-07-7	Benzene, (trichloromethyl)-	(T)
U234	99-35-4	Benzene, 1,3,5-trinitro-	(T)
U021	92-87-5	Benzidine	(T)
U202	81-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts	(T)[2]
U278	22781-23-3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate	(T)
U364	22961-82-6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,	(T)
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	(T)
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	(T)
U367	1563-38-8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-	(T)
U090	94-58-6	1,3-Benzodioxole, 5-propyl-	(T)
U064	189-55-9	Benzo[rst]pentaphene	(T)
U248	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less	(T)[2,5]
U022	50-32-8	Benzo[a]pyrene	(T)
U197	106-51-4	p-Benzoquinone	(T)
U023	98-07-7	Benzotrichloride	(C,R,T)
U085	1464-53-5	2,2'-Bioxirane	(T)

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Waste code	CAS Registry #	Generic name	Reason
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine	(T)
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	(T)
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	(T)
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	(T)
U225	75-25-2	Bromoform	(T)
U030	101-55-3	4-Bromophenyl phenyl ether	(T)
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	(T)
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-	(T)
U031	71-36-3	1-Butanol	(I)[1]
U159	78-93-3	2-Butanone	(I,T)
U160	1338-23-4	2-Butanone, peroxide	(R,T)
U053	4170-30-3	2-Butenal	(T)
U074	764-41-0	2-Butene, 1,4-dichloro-	(I,T)
U143	303-34-4	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]]-	(T)
U031	71-36-3	n-Butyl alcohol	(I)[1]
U136	75-60-5	Cacodylic acid	(T)
U032	13765-19-0	Calcium chromate	(T)
U372	10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester	(T)
U271	17804-35-2	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester	(T)
U280	101-27-9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester	(T)
U238	51-79-6	Carbamic acid, ethyl ester	(T)
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester	(T)
U373	122-42-9	Carbamic acid, phenyl-, 1-methylethyl ester	(T)
U409	23564-05-8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester	(T)
U097	79-44-7	Carbamic chloride, dimethyl-	(T)
U389	2303-17-5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester	(T)
U387	52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	(T)
U114	1 111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters	(T)
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	(T)
U279	63-25-2	Carbaryl	(T)
U372	10605-21-7	Carbendazim	(T)
U367	1563-38-8	Carbofuran phenol	(T)

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Waste code	CAS Registry #	Generic name	Reason
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine	(T)
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	(T)
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	(T)
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	(T)
U225	75-25-2	Bromoform	(T)
U030	101-55-3	4-Bromophenyl phenyl ether	(T)
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	(T)
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-	(T)
U031	71-36-3	1-Butanol	(I)[1]
U159	78-93-3	2-Butanone	(I,T)
U160	1338-23-4	2-Butanone, peroxide	(R,T)
U053	4170-30-3	2-Butenal	(T)
U074	764-41-0	2-Butene, 1,4-dichloro-	(I,T)
U143	303-34-4	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]]-	(T)
U031	71-36-3	n-Butyl alcohol	(I)[1]
U136	75-60-5	Cacodylic acid	(T)
U032	13765-19-0	Calcium chromate	(T)
U372	10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester	(T)
U271	17804-35-2	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester	(T)
U280	101-27-9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester	(T)
U238	51-79-6	Carbamic acid, ethyl ester	(T)
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester	(T)
U373	122-42-9	Carbamic acid, phenyl-, 1-methylethyl ester	(T)
U409	23564-05-8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester	(T)
U097	79-44-7	Carbamic chloride, dimethyl-	(T)
U389	2303-17-5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester	(T)
U387	52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	(T)
U114	1 111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters	(T)
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	(T)
U279	63-25-2	Carbaryl	(T)
U372	10605-21-7	Carbendazim	(T)
U367	1563-38-8	Carbofuran phenol	(T)

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Waste code	CAS Registry #	Generic name	Reason
U215	6533-73-9	Carbonic acid, dithallium(1+) salt	(T)
U033	353-50-4	Carbonic difluoride	(T)
U156	79-22-1	Carbonochloridic acid, methyl ester	(I,T)
U033	353-50-4	Carbon oxyfluoride	(R,T)
U211	56-23-5	Carbon tetrachloride	(T)[3]
U034	75-87-6	Chloral	(T)
U035	305-03-3	Chlorambucil	(T)
U036	57-74-9	Chlordane, alpha & gamma isomers	(T)[3]
U026	494-03-1	Chlornaphazin	(T)
U037	108-90-7	Chlorobenzene	(T)[3]
U038	510-15-6	Chlorobenzilate	(T)
U039	59-50-7	p-Chloro-m-cresol	(T)
U042	110-75-8	2-Chloroethyl vinyl ether	(T)
U044	67-66-3	Chloroform	(T)[3]
U046	107-30-2	Chloromethyl methyl ether	(T)
U047	91-58-7	beta-Chloronaphthalene	(T)
U048	95-57-8	o-Chlorophenol	(T)
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride	(T)
U032	13765-19-0	Chromic acid H2 CrO4, calcium salt	(T)
U050	218-01-9	Chrysene	(T)
U051	----------	Creosote	(T)
U052	1319-77-3	Cresol (Cresylic acid)	(T)[3]
U053	4170-30-3	Crotonaldehyde	(T)
U055	98-82-8	Cumene	(I)[1]
U246	506-68-3	Cyanogen bromide (CN)Br	(T)
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione	(T)
U056	110-82-7	Cyclohexane	(I)[1]
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-	(T)
U057	108-94-1	Cyclohexanone	(I)[1]
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	(T)
U058	50-18-0	Cyclophosphamide	(T)
U240	94-75-7	2,4-D, salts & esters	(T)[2,3]
U059	20830-81-3	Daunomycin	(T)
U060	72-54-8	DDD	(T)
U061	50-29-3	DDT	(T)

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Waste code	CAS Registry #	Generic name	Reason
U062	2303-16-4	Diallate	(T)
U063	53-70-3	Dibenz[a,h]anthracene	(T)
U064	189-55-9	Dibenzo[a,i]pyrene	(T)
U066	96-12-8	1,2-Dibromo-3-chloropropane	(T)
U069	84-74-2	Dibutyl phthalate	(T)
U070	95-50-1	o-Dichlorobenzene	(T)
U071	541-73-1	m-Dichlorobenzene	(T)
U072	106-46-7	p-Dichlorobenzene	(T)
U073	91-94-1	3,3'-Dichlorobenzidine	(T)
U074	764-41-0	1,4-Dichloro-2-butene	(I,T)
U075	75-71-8	Dichlorodifluoromethane	(T)
U078	75-35-4	1,1-Dichloroethylene	(T)[3]
U079	156-60-5	1,2-Dichloroethylene	(T)
U025	111-44-4	Dichloroethyl ether	(T)
U027	108-60-1	Dichloroisopropyl ether	(T)
U024	111-91-1	Dichloromethoxy ethane	(T)
U081	120-83-2	2,4-Dichlorophenol	(T)
U082	87-65-0	2,6-Dichlorophenol	(T)
U084	542-75-6	1,3-Dichloropropene	(T)
U085	1464-53-5	1,2:3,4-Diepoxybutane	(I,T)
U108	123-91-1	1,4-Diethyleneoxide	(T)
U028	117-81-7	Diethylhexyl phthalate	(T)
U395	5952-26-1	Diethylene glycol, dicarbamate	(T)
U086	1615-80-1	N,N'-Diethylhydrazine	(T)
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate	(T)
U088	84-66-2	Diethyl phthalate	(T)
U089	56-53-1	Diethylstilbesterol	(T)
U090	94-58-6	Dihydrosafrole	(T)
U091	119-90-4	3,3'-Dimethoxybenzidine	(T)
U092	124-40-3	Dimethylamine	(I)[1]
U093	60-11-7	p-Dimethylaminoazobenzene	(T)
U094	57-97-6	7,12-Dimethylbenz[a]anthracene	(T)
U095	119-93-7	3,3'-Dimethylbenzidine	(T)
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide	(R)[1]
U097	79-44-7	Dimethylcarbamoyl chloride	(T)
U098	57-14-7	1,1-Dimethylhydrazine	(T)

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Waste code	CAS Registry #	Generic name	Reason
U099	540-73-8	1,2-Dimethylhydrazine	(T)
U101	105-67-9	2,4-Dimethylphenol	(T)
U102	131-11-3	Dimethyl phthalate	(T)
U103	77-78-1	Dimethyl sulfate	(T)
U105	121-14-2	2,4-Dinitrotoluene	(T)[3]
U106	606-20-2	2,6-Dinitrotoluene	(T)
U107	117-84-0	Di-n-octyl phthalate	(T)
U108	123-91-1	1,4-Dioxane	(T)
U109	122-66-7	1,2-Diphenylhydrazine	(T)
U110	142-84-7	Dipropylamine	(I)[1]
U111	621-64-7	Di-n-propylnitrosamine	(T)
U041	106-89-8	Epichlorohydrin	(T)
U001	75-07-0	Ethanal	(I)[1]
U404	121-44-8	Ethanamine, N,N-diethyl-	(T)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-	(T)
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	(T)
U067	106-93-4	Ethane, 1,2-dibromo-	(T)
U076	75-34-3	Ethane, 1,1-dichloro-	(T)
U077	107-06-2	Ethane, 1,2-dichloro-	(T)
U131	67-72-1	Ethane, hexachloro-	(T)
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	(T)
U117	60-29-7	Ethane, 1,1'-oxybis-	(I)[1]
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	(T)
U184	76-01-7	Ethane, pentachloro-	(T)
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-	(T)
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-	(T)
U218	62-55-5	Ethanethioamide	(T)
U226	71-55-6	Ethane, 1,1,1-trichloro-	(T)
U227	79-00-5	Ethane, 1,1,2-trichloro-	(T)
U410	59669-26-0	Ethanimidothioic acid, N,N'- [thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester	(T)
U394	30558-43-1	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester	(T)
U359	110-80-5	Ethanol, 2-ethoxy-	(T)
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-	(T)
U395	5952-26-1	Ethanol, 2,2'-oxybis-, dicarbamate	(T)
U004	98-86-2	Ethanone, 1-phenyl-	(T)

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Waste code	CAS Registry #	Generic name	Reaso
U043	75-01-4	Ethene, chloro-	(T)
U042	110-75-8	Ethene, (2-chloroethoxy)-	(T)
U078	75-35-4	Ethene, 1,1-dichloro-	(T)
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-	(T)
U210	127-18-4	Ethene, tetrachloro-	(T)
U228	79-01-6	Ethene, trichloro-	(T)
U112	141-78-6	Ethyl acetate	(I)[1]
U113	140-88-5	Ethyl acrylate	(I)1
U238	51-79-6	Ethyl carbamate (urethane)	(T)
U117	60-29-7	Ethyl ether	(I)1
U114	111-54-6	Ethylenebisdithiocarbamic acid, salts & esters	(T)2
U067	106-93-4	Ethylene dibromide	(T)
U077	107-06-2	Ethylene dichloride	(T)
U359	110-80-5	Ethylene glycol monoethyl ether	(T)
U115	75-21-8	Ethylene oxide	(I,T)
U116	96-45-7	Ethylenethiourea	(T)
U076	75-34-3	Ethylidene dichloride	(T)
U118	97-63-2	Ethyl methacrylate	(T)
U119	62-50-0	Ethyl methanesulfonate	(T)
U120	206-44-0	Fluoranthene	(T)
U122	50-00-0	Formaldehyde	(T)4
U123	64-18-6	Formic acid	(C,T)
U124	110-00-9	Furan	(I)[1]
U125	98-01-1	2-Furancarboxaldehyde	(I)[1]
U147	108-31-6	2,5-Furandione	(T)
U213	109-99-9	Furan, tetrahydro-	(I)[1]
U125	98-01-1	Furfural	(I)[1]
U124	110-00-9	Furfuran	(I)[1]
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-	(T)
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)- carbonyl]amino]-	(T)
U126	765-34-4	Glycidylaldehyde	(T)
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-	(T)
U127	118-74-1	Hexachlorobenzene	(T)[3]
U128	87-68-3	Hexachlorobutadiene	(T)[3]
U130	77-47-4	Hexachlorocyclopentadiene	(T)
U131	67-72-1	Hexachloroethane	(T)[3]

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Waste code	CAS Registry #	Generic name	Reason
U132	70-30-4	Hexachlorophene	(T)
U243	1888-71-7	Hexachloropropene	(T)
U133	302-01-2	Hydrazine (R,T)	(T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-	(T)
U098	57-14-7	Hydrazine, 1,1-dimethyl-	(T)
U099	540-73-8	Hydrazine, 1,2-dimethyl-	(T)
U109	122-66-7	Hydrazine, 1,2-diphenyl-	(T)
U134	7664-39-3	Hydrofluoric acid	(C,T)
U134	7664-39-3	Hydrogen fluoride	(C,T)
U135	7783--06--4	Hydrogen sulfide	(T)
U135	7783--06--4	Hydrogen sulfide H2 S	(T)
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-	(R)[1]
U116	96-45-7	2-Imidazolidinethione	(T)
U137	193-39-5	Indeno[1,2,3-cd]pyrene	(T)
U190	85-44-9	1,3-Isobenzofurandione	(T)
U140	78-83-1	Isobutyl alcohol	(I,T)
U141	120-58-1	Isosafrole	(T)
U142	143-50-0	Kepone	(T)
U143	303-34-4	Lasiocarpine	(T)
U144	301-04-2	Lead acetate	(T)
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-	(T)
U145	7446-27-7	Lead phosphate	(T)
U146	1335-32-6	Lead subacetate	(T)
U129	58-89-9	Lindane	(T)[3]
U163	70-25-7	MNNG	(T)
U147	108-31-6	Maleic anhydride	(T)
U148	123-33-1	Maleic hydrazide	(T)
U149	109-77-3	Malononitrile	(T)
U150	148-82-3	Melphalan	(T)
U151	7439-97-6	Mercury	(T)[3]
U152	126-98-7	Methacrylonitrile	(I, T)
U092	124-40-3	Methanamine, N-methyl-	(I)[1]
U029	74-83-9	Methane, bromo-	(T)
U045	74-87-3	Methane, chloro-	(I, T)
U046	107-30-2	Methane, chloromethoxy-	(T)
U068	74-95-3	Methane, dibromo-	(T)

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Waste code	CAS Registry #	Generic name	Reason
U080	75-09-2	Methane, dichloro-	(T)
U075	75-71-8	Methane, dichlorodifluoro-	(T)
U138	74-88-4	Methane, iodo-	(T)
U119	62-50-0	Methanesulfonic acid, ethyl ester	(T)
U211	56-23-5	Methane, tetrachloro-	(T)
U153	74-93-1	Methanethiol	(I, T)
U225	75-25-2	Methane, tribromo-	(T)
U044	67-66-3	Methane, trichloro-	(T)
U121	75-69-4	Methane, trichlorofluoro-	(T)
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	(T)
U154	67-56-1	Methanol	(I)[1]
U155	91-80-5	Methapyrilene	(T)
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	(T)
U247	72-43-5	Methoxychlor	(T)[3]
U154	67-56-1	Methyl alcohol	(I)[1]
U029	74-83-9	Methyl bromide	(T)
U186	504-60-9	1-Methylbutadiene	(I)[1]
U045	74-87-3	Methyl chloride	(I,T)
U156	79-22-1	Methyl chlorocarbonate	(I,T)
U226	71-55-6	Methyl chloroform	(T)
U157	56-49-5	3-Methylcholanthrene	(T)
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)	(T)
U068	74-95-3	Methylene bromide	(T)
U080	75-09-2	Methylene chloride	(T)
U159	78-93-3	Methyl ethyl ketone (MEK)	(I,T)[2]
U160	1338-23-4	Methyl ethyl ketone peroxide	(R,T)
U138	74-88-4	Methyl iodide	(T)
U161	108-10-1	Methyl isobutyl ketone	(I)[1]
U162	80-62-6	Methyl methacrylate	(I,T)
U161	108-10-1	4-Methyl-2-pentanone	(I)[1]
U164	56-04-2	Methylthiouracil	(T)
U010	50-07-7	Mitomycin C	(T)
U059	20830-81-3	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)	(T)

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Waste code	CAS Registry #	Generic name	Reason
U167	134-32-7	1-Naphthalenamine	(T)
U168	91-59-8	2-Naphthalenamine	(T)
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-	(T)
U165	91-20-3	Naphthalene	(T)
U047	91-58-7	Naphthalene, 2-chloro-	(T)
U166	130-15-4	1,4-Naphthalenedione	(T)
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]bis[5-amino-4-hydroxy]-, tetrasodium salt	(T)
U279	63-25-2	1-Naphthalenol, methylcarbamate	(T)
U166	130-15-4	1,4-Naphthoquinone	(T)
U167	134-32-7	alpha-Naphthylamine	(T)
U168	91-59-8	beta-Naphthylamine	(T)
U217	10102-45-1	Nitric acid, thallium(1+) salt	(T)
U169	98-95-3	Nitrobenzene (I,T)	(T)[3]
U170	100-02-7	p-Nitrophenol	(T)
U171	79-46-9	2-Nitropropane	(I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine	(T)
U173	1116-54-7	N-Nitrosodiethanolamine	(T)
U174	55-18-5	N-Nitrosodiethylamine	(T)
U176	759-73-9	N-Nitroso-N-ethylurea	(T)
U177	684-93-5	N-Nitroso-N-methylurea	(T)
U178	615-53-2	N-Nitroso-N-methylurethane	(T)
U179	100-75-4	N-Nitrosopiperidine	(T)
U180	930-55-2	N-Nitrosopyrrolidine	(T)
U181	99-55-8	5-Nitro-o-toluidine	(T)
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide	(T)
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide	(T)
U115	75-21-8	Oxirane	(I,T)
U126	765-34-4	Oxiranecarboxyaldehyde	(T)
U041	106-89-8	Oxirane, (chloromethyl)-	(T)
U182	123-63-7	Paraldehyde	(T)
U183	608-93-5	Pentachlorobenzene	(T)
U184	76-01-7	Pentachloroethane	(T)
U185	82-68-8	Pentachloronitrobenzene (PCNB)	(T)
U161	108-10-1	Pentanol, 4-methyl-	(I)[1]

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Waste code	CAS Registry #	Generic name	Reason
U186	504-60-9	1,3-Pentadiene	(I)[1]
U187	62-44-2	Phenacetin	(T)
U188	108-95-2	Phenol	(T)
U048	95-57-8	Phenol, 2-chloro-	(T)
U039	59-50-7	Phenol, 4-chloro-3-methyl-	(T)
U081	120-83-2	Phenol, 2,4-dichloro-	(T)
U082	87-65-0	Phenol, 2,6-dichloro-	(T)
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-	(T)
U101	105-67-9	Phenol, 2,4-dimethyl-	(T)
U052	1319-77-3	Phenol, methyl-	(T)
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	(T)
U411	114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate.	(T)
U170	100-02-7	Phenol, 4-nitro-	(T)
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-	(T)
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)	(T)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester	(T)
U189	1314-80-3	Phosphorus sulfide	(R)[1]
U190	85-44-9	Phthalic anhydride	(T)
U191	109-06-8	2-Picoline	(T)
U179	100-75-4	Piperidine, 1-nitroso-	(T)
U192	23950-58-5	Pronamide	(T)
U194	107-10-8	1-Propanamine	(I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-	(T)
U110	142-84-7	1-Propanamine, N-propyl-	(I)[1]
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-	(T)
U083	78-87-5	Propane, 1,2-dichloro-	(T)
U149	109-77-3	Propanedinitrile	(T)
U171	79-46-9	Propane, 2-nitro-	(I,T)
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-	(T)
U193	1120-71-4	1,3-Propane sultone	(T)
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)	(T)
U140	78-83-1	1-Propanol, 2-methyl-	(I,T)
U002	67-64-1	2-Propanone	(I)[1]
U007	79-06-1	2-Propenamide	(T)
U084	542-75-6	1-Propene, 1,3-dichloro-	(T)
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	(T)

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Waste code	CAS Registry #	Generic name	Reason
U009	107-13-1	2-Propenenitrile	(T)
U152	126-98-7	2-Propenenitrile, 2-methyl-	(I,T)
U008	79-10-7	2-Propenoic acid	(I)[1]
U113	140-88-5	2-Propenoic acid, ethyl ester	(I)[1]
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	(T)
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	(I,T)
U373	122-42-9	Propham	(T)
U411	114-26-1	Propoxur	(T)
U387	52888-80-9	Prosulfocarb	(T)
U194	107-10-8	n-Propylamine	(I,T)
U083	78-87-5	Propylene dichloride	(T)
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-	(T)
U196	110-86-1	Pyridine	(T)[3]
U191	109-06-8	Pyridine, 2-methyl-	(T)
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2- chloroethyl)amino]-	(T)
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	(T)
U180	930-55-2	Pyrrolidine, 1-nitroso-	(T)
U200	50-55-5	Reserpine	(T)
U201	108-46-3	Resorcinol	(T)
U203	94-59-7	Safrole	(T)
U204	7783-00-8	Selenious acid	(T)
U204	7783--00--8	Selenium dioxide	(T)
U205	7488--56--4	Selenium sulfide	(T)
U205	7488--56--4	Selenium sulfide SeS2	(R,T)
U015	115--02--6	L-Serine, diazoacetate (ester)	(T)
U206	18883--66--4	Streptozotocin	(T)
U103	77--78--1	Sulfuric acid, dimethyl ester	(T)
U189	1314--80--3	Sulfur phosphide	(R)[1]
U207	95--94--3	1,2,4,5-Tetrachlorobenzene	(T)
U208	630--20--6	1,1,1,2-Tetrachloroethane	(T)
U209	79--34--5	1,1,2,2-Tetrachloroethane	(T)
U210	127--18--4	Tetrachloroethylene	(T)[3]
U213	109--99--9	Tetrahydrofuran	(I)1
U214	563--68--8	Thallium(I) acetate	(T)
U215	6533--73--9	Thallium(I) carbonate	(T)
U216	7791--12--0	Thallium(I) chloride	(T)

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U217	10102--45--1	Thallium(I) nitrate	(T)
U218	62--55--5	Thioacetamide	(T)
U410	59669--26--0	Thiodicarb	(T)
U153	74--93--1	Thiomethanol	(I,T)
U244	137--26--8	Thioperoxydicarbonic diamide [(H2 N)C(S)]2 S2, tetramethyl-	(T)
U409	23564--05--8	Thiophanate-methyl	(T)
U219	62--56--6	Thiourea	(T)
U244	137--26--8	Thiram	(T)
U220	108--88--3	Toluene	(T)
U221	25376--45--8	Toluenediamine	(T)
U223	26471--62--5	Toluene diisocyanate	(R,T)
U328	95--53--4	o-Toluidine	(T)
U353	106--49--0	p-Toluidine	(T)
U222	636--21--5	o-Toluidine hydrochloride	(T)
U389	2303--17--5	Triallate	(T)
U011	61--82--5	1H-1,2,4-Triazol-3-amine	(T)
U226	71--55--6	1,1,1-Trichloroethane	(T)
U227	79--00--5	1,1,2-Trichloroethane	(T)
U228	79--01--6	Trichloroethylene	(T)[3]
U121	75--69--4	Trichloromonofluoromethane	(T)
U404	121--44--8	Triethylamine	(T)
U234	99--35--4	1,3,5-Trinitrobenzene	(R,T)
U182	123--63--7	1,3,5-Trioxane, 2,4,6-trimethyl-	(T)
U235	126--72--7	Tris(2,3-dibromopropyl) phosphate	(T)
U236	72--57--1	Trypan blue	(T)
U237	66--75--1	Uracil mustard	(T)
U176	759--73--9	Urea, N-ethyl-N-nitroso-	(T)
U177	684--93--5	Urea, N-methyl-N-nitroso-	(T)
U043	75--01--4	Vinyl chloride	(T)[3]
U248	81--81--2	Warfarin, & salts, when present at concentrations of 0.3% or less	(T)[2,3]
U239	1330--20--7	Xylene	(I)[1]
U200	50--55--5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-	(T)
U249	1314--84--7	Zinc phosphide Zn3 P2, when present at concentrations of 10% or less	(T)[4]

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Hazardous Waste Identification

Commercial chemical products, off-spec products, OR container or spill residues from chemical products that:

- Have NOT been used and
- Have ONLY ONE ACTIVE ingredient

There are 2 lists of commercial chemical products:

- P - Listed - Acutely Toxic
- U-Listed - Toxic, Ignitable, Corrosive, or Reactive

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P-List

P-list examples:

- P042: Epinephrine
- P108: Strychnine
- P076: Nitric Oxide
- P110: Tetraethyl lead

The listed chemical must be the sole active ingredient in a commercial chemical product, off-spec product, or container residue

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Hazardous Waste Identification

RCRA Listed Wastes

- "P"- and ”U"-listed chemicals become hazardous wastes when "discarded", applied to the land, or burned as fuel
- "P" and "U" wastes do not include manufacturing process wastes
- P-listed chemicals may be accumulated at the SAP in quantities not exceeding 1 quart

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U-List

U-list examples:

- U002: Acetone
- U061: DDT
- U228 Trichloroethylene (TCE)
- U211: Carbon tetrachloride
- U133: Hydrazine
- Specified pharmaceuticals

Examples of commercial chemical products (U or P):

- Outdated laboratory chemicals
- Certain expiration-dated hospital pharmacy wastes

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Hazardous Waste Determination Examples

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More Stringent CA Requirements for Waste ID

"California-only" hazardous wastes (wastes that are not hazardous under the federal definition); otherwise known as non-RCRA wastes. These include:

- California-only listed wastes
- Used oil (health and safety code section 25250) presumed to be HW
- Mercury switches
- Wastes exceeding LD50 or LC50
- Wastes that are hazardous as a result of soluble threshold limit concentration (STLC), or total threshold limit concentration (TTLC), while not exceeding federal TCLP values

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More Stringent California Requirements for Waste ID

Additional toxicity criteria

- Acute oral, dermal, inhalation, and aquatic LD50 and LC50 dose values for toxic wastes
- Soluble and total threshold limit concentrations for persistence and bioaccumulative toxic substances
- Containing a listed substance above 0.001% by weight

Waste extraction test (WET)

- Extraction solution more acidic
- Concentration thresholds for 20 inorganics and 18 organics

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More Stringent CA Requirements for Waste ID

Extremely hazardous wastes (22 CCR 66261.110)

Criteria:

- Acute oral LD50 <= 50 mg/kg
- Acute dermal LD50 <= 43 mg/kg
- Acute inhalation LD50 <= 100 ppm as a gas or vapor
- Contains substances listed in 22 CCR 66261.24(a)(7) (see Appendix) at concentration >= 0.1% by weight
- Human exposure may result in death, disabling personal injury or serious illness due to carcinogenity, toxicity, bioaccumulation, or persistence in the environment
- Water reactive

Special wastes (22 CCR 66261.120)

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Hazardous Waste Identification

- Characteristic wastes
- Listed wastes
- Waste mixtures
- Waste residues

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Hazardous Waste Determination

"Mixture" Rule (40 CFR 261.3(a)(2))

"Derived From" Rule (40 CFR 261.3(c)(2))

Solid waste generated from treatment, storage, or disposal of hazardous waste is a hazardous waste

Includes:

- Treatment residue (sludge or ash)
- Spill residues
- Emission control dust
- Leachate

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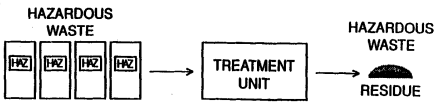
The Derived-From Rule

(40 CFR 261.3(c)(2))

Solid Waste Generated from Treatment, Storage, or Disposal of Hazardous Waste is a Hazardous Waste

Includes:

- Treatment Residue (Sludge or Ash)
- Spill Residues
- Emission Control Dust
- Leachate



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The Derived-From Rule

Listed Hazardous Waste

⇩

Any residue from the treatment, storage, or disposal or a listed waste...

⇩

...is still a hazardous waste...

⇩

...unless the residue is derived-from a hazardous waste that is listed solely for exhibiting the characteristic of ignitability, corrosivity, and/or reactivity and does not exhibit a characteristic of hazardous waste

or

...unless the waste is recycled to make new products or processed to recover usable materials with economic value (provided that product is not used in a manner constituting disposal or burned for energy recovery)

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Hazardous Waste Identification

"Listed" Hazardous Waste + Non-Hazardous Waste = Hazardous Waste

Commingling waste creates larger volumes of hazardous wastes

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Hazardous Waste Identification Waste Mixtures

HW listed for Ignitability (I), Corrosivity (C), or Reactivity (R), + solid waste = Hazardous Waste

- Unless resulting mixture is not I, C, or R

HW listed for "acute" (H) or Toxicity (T) + solid waste = Hazardous waste unless delisted

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Mixture Rule

Any amount of nonhazardous solid waste	+	Any amount of listed hazardous waste	=	Listed hazardous waste
Any amount of nonhazardous solid waste	+	Any amount of listed hazardous waste that is listed solely for exhibiting the characteristic of ignitability, corrosivity, and/or reactivity	=	Nonhazardous waste if mixture does not exhibit any characteristic

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Hazardous Waste Debris Rule

Debris = solid material exceeding a 60 mm particle size intended for disposal and that is

- A manufactured object, or plant and animal matter, or geologic material
- **Hazardous Waste Debris** =
  - Debris that contains a listed hazardous waste (HW), or
  - that exhibits a characteristic of HW

The following are not debris: Any material for which a specific treatment standard is provided

- e.g., lead acid batteries, cadmium batteries, and radioactive lead solids
- Process residuals; and
- e.g., smelter lag, residues from the treatment of waste, wastewater, sludges, or air emission residues
- Intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume

A mixture of debris that has not been treated to the standards provided by 40 CFR 268.45 & other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection

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Contained-in Policy/HW Debris Rule

40 CFR 261.3(f)(2)

Hazardous waste identification rule (HWIR) allows flexibility in managing contaminated "staging piles"

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Treatment in Tanks & Containers (Federal only)

- On-site generator may treat hazardous waste in containers, tanks, or containment buildings (**within 90 days or 180 days**) Except:
- No dilution (prohibited under 40 CFR 268.3)
- No evaporation (either passive or heat-applied).
- Available to SQG, & LQG
- VSQG must meet specified performance standards for episodic events

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RCRA Empty Containers

Contaminated containers

- Exempted if "empty"
- RCRA empty
  - Empty containers are not hazardous wastes
  - Residues remaining in empty containers are not hazardous wastes
  - Still a CA hazardous waste unless CA empty too

California Empty

- Containers that don't meet the empty standard are subject to management as a hazardous waste. (40 CFR 261.7(a)(2))

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RCRA Empty Containers

When are containers with U-listed wastes empty?

40 CFR 261.7 defines when containers are RCRA empty and are, therefore, not a hazardous waste

- All waste has been removed that can be removed by ***pouring, pumping, or by means of suction***; *and*
- Less than 1 inch of residue remains (regardless of the container size); or
- For container ≤ 119 gallons, less than 3% by volume (of container capacity) of residue remains; or
- For containers > 119 gallons, less than 0.3% by weight (of the chemical) of residue remains; or
- Pressure in compressed gas container approaches atmospheric pressure

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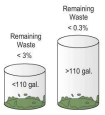
RCRA Empty vs. California Empty

- Containers that have been contaminated with hazardous waste are exempted if they are empty. There are two measures to determine if a container is *empty*:
- According to federal regulations, a container is considered empty when all wastes are removed using common practices and:
- There must be no more than 2.5 cm (1 inch) remaining in the container, -- or -- containers less than 110 gallons must have no more than 3% remaining,-- or -- containers over 110 gallons must have no mo.re than 0.3% remaining in the container.
- Compressed gas cylinders are considered empty when the pressure in the container approaches atmospheric pressure.
- Containers holding acutely hazardous materials must be triple rinsed.



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California Empty Containers

In California, a **RCRA-empty container is still a hazardous waste** unless it also meets the Title 22 CCR 66261.7 requirements for "California empty," which are:

- **Pourable Materials**: Remove material by any practicable means:
- **Draining, pouring (no longer continuous stream when container is inverted), pumping, or aspirating**
- **Non-pourable Materials** (including viscous materials): No material remains after scraping, chipping (but not rinsing)
- **Acute/Extremely Hazardous Material**: Triple-rinsing using solvent capable of removing material (or equivalent method)

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RCRA Empty Containers

When are containers with P-listed empty?

- Containers that held acute hazardous wastes have been triple-rinsed with solvent capable of removing the hazardous waste or cleaned by other means equivalent to the above.
- In the case of a container, the inner liner that prevented contact of the hazardous waste has been removed
- Triple rinsing may constitute "treatment" in some jurisdictions

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Empty Containers

How must empty containers be managed?

Containers (> 5 gallons) must:

- Be structurally changed to prevent subsequent reuse (i.e., punctured, crushed)
- Be managed at a Class III solid waste facility (e.g., at local landfill)
- Containers can be refilled by original supplier and remain exempt if:
  - Container is not treated prior to return to the supplier
- PCBs mixed with RCRA hazardous wastes are subject to federal RCRA LDR treatment requirements and TSCA disposal requirements

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Hazardous Waste Management Training

Used Oil

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Federal Used Oil Standards

- **Definition of used oil**: any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).
- Animal and vegetable oils are not "used oil."
- Wastewaters contaminated with de minimums quantities of used oil are excluded from 40 CFR 279 because these waters are regulated by the Clean Water Act.
- EPA presumes that used oil is to be recycled
- EPA ID number is only required of generators if they transport off-site shipments of used oil in quantities greater than 55 gallons.

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Used Oil: A Hazardous Waste?

- In 1992, EPA stated that there was a presumption that all used oil will be recycled until the used oil is disposed of or sent for disposal. Thus, until used oil is disposed of, it is regulated under 40 CFR 279.
- Used oil that is disposed of should be characterized like any other solid waste and need to be managed as hazardous if it exhibits a characteristic of HW or if it is mixed with a listed HW.
- Used oil that is not hazardous waste and cannot be recycled under the 40 CFR 279 rules must be disposed of in accordance with the solid (nonhazardous) waste disposal rules of 40 CFR 257 and 40 CFR 258)

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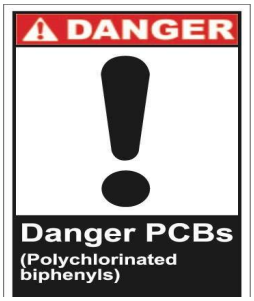
Used Oil Containing PCBs

- Used oil containing PCBs at any concentration less than 50 ppm is subject to the used oil management requirements of 40 CFR 279.
- Used oil containing PCBS at 50 ppm or greater is regulated under 40 CFR 761 (TSCA). Persons are prohibited from avoiding the used oil regulations by diluting used oil containing PCBs.



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Used Oil Filters and Fuel Filters Recycling

(22 CCR §66266.130)

Used oil filters and fuel filters must be managed as hazardous waste unless one of the following apply:

- Filters are nonhazardous
- Filters are generated by a household
- Filters contain a residue of used oil and are exempt from regulation as a hazardous waste under the federal scrap metal exclusion (40 CFR §261.6), if certain conditions are met

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Storage and Labeling Used Oil Filters

(22 CCR 66266.130)

Generators may store:

- Less than one ton of used oil filters for up to 1 year.
- Storage of one ton or more for 180 days
- Unless storage facility has a hazardous waste permit authorizing longer storage.

Container requirements:

- Used oil filters must be accumulated, stored and transferred in sealed, leak and rain-proof containers.
- Containers must be labeled as "drained used oil filters" (not as hazardous waste) and must display the initial date of accumulation or receipt on each container of filters.
- Initial date of accumulation is the date when the first filter is placed in the container, or the date when a container of filters is received at a second location

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Hazardous Waste Management

Hazardous Waste Management/Activities

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Hazardous Waste Management/Activities

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Hazardous Waste Labeling/Marking

Containers of hazardous waste must/should be labeled with the following information:

- Accumulation start date (required)
- The words "hazardous waste" (required)
- Composition and physical state of the waste (recommended)
- Hazardous properties of the waste (recommended)
- Name and address of the generator (DOT shipping requirement)
- In compliance with SOP JW-400

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Hazardous Waste Label

This part is very important

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Generators

40 CFR 262/22 CCR 66262 *et seq.*

Facility owner or operator or person who first creates a hazardous waste

Person who first makes the waste subject to Subtitle C regulations:

- Combines hazardous wastes
- Imports hazardous wastes

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3 Categories of Generators

(CA & Federal)

Large Quantity Generators

> or = 1,000 kg/mo. of non-acute HW
>=1 kg/mo. of acute HW
>= 100 kg clean-up residues of acute HW

Small Quantity Generators

100 to 1,000 kg/mo. of non-acute HW
< or =1 kg/mo. acute HW
< or = 100 kg/mo. clean-up residues of acute HW
Note: Accumulation of 6,000 kg at any one time requires a one-year storage permit

Very Small Quantity Generators

< or = 100 kg/mo. non-acute HW (Recognized as SQG under CA law)
< or =1 kg/mo. acute HW
< or = 100 kg/mo.. clean-up residues of acute HW

NOTE: 100 kg = 220 lbs.

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Fed. & CA Generator Requirements

What, When, How

Requirement	Federal VSQG	Federal SQG	Federal LQG	State VSQG
Waste Characterization	X	X	X	X
Obtain EPA ID Number		X	X	X
Manifesting		X	X	X
LDR Notification		X	X	X
Exception Reporting		(modified)	X	(modified)
Personnel Training		X	X	X
Personnel Training Program			X	
Contingency Plan			X	
Weekly Inspections		X	X	X
50 Feet from Fence line		X	X	X

CESQG = Conditionally Exempt Small Quantity Generator
VSQG = Very Small Quantity Generator
SQG = Small Quantity Generator
LQG= Large Quantity Generator
LDR = Land Disposal Restriction

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Federal Generator Requirements

What, When, How

Requirement	Federal VSQG	Federal SQG	Federal LQG	State VSQG
Post Emergency Information		X	X	X
Emergency Equipment		X	X	X
Container Management		X	X	X
Tank Management		X	X	X
Accumulation Facility Closure			X	
Biennial Report			X	
HW Pollution Prevention (CA ONLY)			X	
Short-term Waste Accumulation Limit (i.e., Satellite accumulation)		Up to 55 gallons of hazardous waste and 1 quart of acutely hazardous waste **NOTE**: CA law prohibits storing HW for more than 1 year from accumulation		Up to 55 gallons of hazardous waste and 1 quart of acutely or extremely hazardous waste **NOTE**: CA law prohibits storing HW for more than one year from accumulation.
Long-term Waste Accumulation Limit		180 Days	90 Days	180 Days

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Case-by-Case Extensions

One or more 30-day extensions may be granted at the discretion of the CUPA or authorized officer or agency for the generator's non-RCRA or RCRA exempt hazardous waste provided the generator meets all of the conditions of 22 CCR 6262.35(a)(2).

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EPA ID Number

- Generator EPA ID number - required to treat, transport, or offer for transport
- Transporter/TSDF number - cannot offer waste to transporters or TSDF which does not have EPA ID number

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Episodic Waste Generation Containers & Tanks

Applicability

Applies to SQGs & VSQG for planned & unplanned events

- **Planned events**: maintenance, tank cleanouts, short-term projects & removing excess chemicals
- **Unplanned events**: Production process upsets, product recalls, accidental spills, acts of nature
- Up to two episodic events allowed (2nd event subject to EPA approval)

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Episodic Waste Generation
Containers & Tanks: Labeling

Labeling:

- **"Episodic Hazardous Waste"**
- **Indicate hazards** (i.e., ignitable, corrosive, reactive, or toxic)
- **Date**: Episodic event began
- **Accumulation**: Up to 60 days
- **Manifest:** required for off-site shipments

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Episodic Waste Generation
Containers & Tanks: Records

Records:

- Beginning & ending dates of episodic event
- Description of episodic event
- Types and quantities of HW generated during event
- Description of fate of HW managed
- Name of transporter
- EPA approval letter (as appropriate)

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California CESQG is Limited Exemption

There is no comparable CA provision governing CESQG (40 CFR 261.5)

CESQGs in CA are subject to SQG requirements except:

- Accumulation requirements don't begin until 100 kg are collected

Household hazardous waste generators are CESQGs and are exempt from SQG requirements (CA Health & Safety Code Section 25218)

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Generator Requirements

(40 CFR 262.34)

- ❖ EPA identification number
- ❖ Pre-transport requirements
- ❖ Manifests for shipments
- ❖ Record keeping and reporting
- ❖ Hazardous waste accumulation time
- ❖ No permit required if accumulated (in tanks & containers) less than:
  - ➢ 90 days - large quantity generators
  - ➢ 180 days or 270 days - small quantity generators
  - ➢ No time limit - conditionally exempt small quantity generators
- ❖ Waste minimization

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Generator Pre-transport Requirements

Generators must meet most large-quantity generator requirements:

- ➢ Container use
- ➢ Marking
- ➢ Labeling
- ➢ On-site or on-call emergency response coordinator (for SQGs only)
- ➢ Posting of emergency response & notification information (for SQGs only)
- ➢ Employee training

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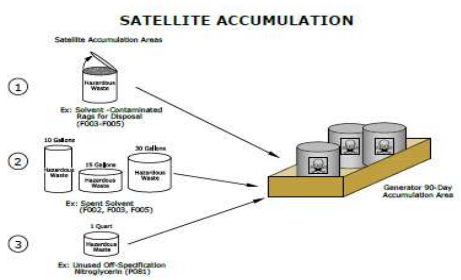
Satellite Accumulation



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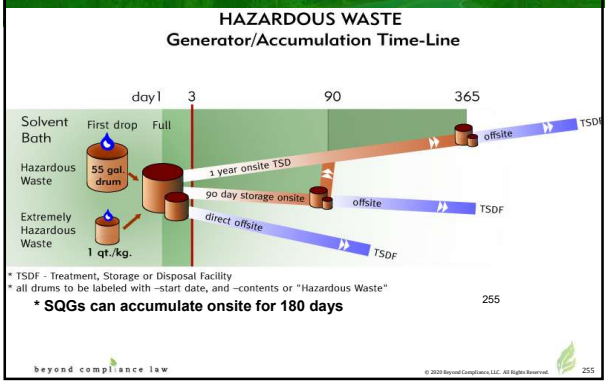
Accumulation Time Limits for LQGs



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Generator/Accumulation Requirements

40 CFR 262.34 and 22 CCR 66262.34 & HSC 251223.3

- Workplace or satellite accumulation areas:
- 55 gallons of hazardous waste or 1 quart of extremely or acutely hazardous waste
- Filled container holding excess waste must be marked with date
- 3 accumulation start dates may be required
  - One year from SAP
  - Must move to treatment, storage, or disposal facility within 3 days
  - 90 or 180 day limit
- Different standards for laboratories (AB 966)

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Satellite Accumulation Requirements

Workplace or satellite accumulation areas:

- Storage allowed up to 1 year or until storage volume limits are reached.
- Storage must be "at or near the point of generation" and "under the control of the generator"
- Container requirements
- Labeling requirements:
  - Date first drop of waste placed in container at SAP must be marked
  - Information must be clearly visible for inspection

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Management of Laboratory Hazardous Waste Act

AB 966 (Ackerman, 1998) HSC 25123.5

Revised definition of "treatment"

Defined terms:

- Laboratory
- Laboratory hazardous waste
- Laboratory accumulation area
- Exempts from hazardous waste facilities permit or authorization requirements the treatment of laboratory hazardous wasted generated onsite if requirements are met based on certain criteria

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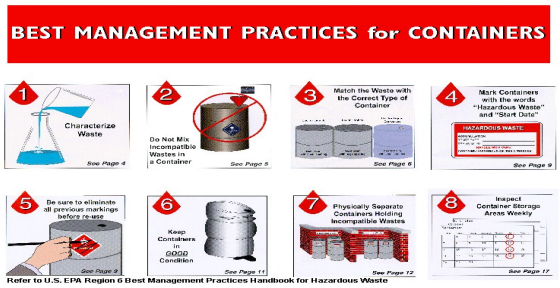
Container Requirements & BMPs



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Generator Satellite Accumulation Storage Requirements: Container Condition

- Containers must be in "good physical condition":
- Must not show signs of rust or corrosion
- No sharp-edged creases or dents are permitted
- No bulging heads (due to over-pressurizing container)

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Generator Satellite Accumulation Storage Requirements - Container Management

Wastes must be compatible with container

(see compatibility table)

Container compatibility is required:

- Some acids destroy metal drums
- Some organic solvents dissolve plastic drum

Containers must always be closed except whe adding/removing wastes

Containers must be marked with:

- "Hazardous waste" or
- Identification of contents of container

Containers must comply with air emission standards (40 CFR 265.1080 known as "Subpart CC")

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LQG: RCRA Required Training

LQGs that accumulate hazardous waste on-site for 90 days or less without a permit must:

- Comply with the same personnel training requirements that apply to hazardous waste TSDFs.
- A generator who accumulates hazardous waste for more than 90 days is an operator of a storage facility and must also comply with the training requirements for TSDFs. 40 CFR 262.17
- Training required for Large quantity generators (22 CCR 66265.16)
- Initial training required within 6 months of employment or assignment to new position
- Supervision required until training received
- Annual refresher training required
- Training must include written job descriptions
- Written description of type and amount of training each job category must take

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SQG RCRA Training Requirements

- Required to ensure all employees are "thoroughly familiar with waste handling/emergency procedures" 40 CFR 262.16 (22 CCR 66262.34)
- Not required to have a formal written training program for their employees.
- SQGs are required, however, to ensure that facility personnel are thoroughly familiar with:
  - proper waste-handling procedures and
  - emergency response procedures relevant to their responsibilities during normal facility operations and emergencies. 40 CFR 262.16

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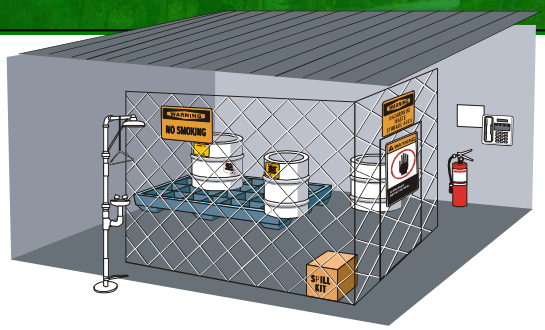
Accumulation Area



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Generator/Accumulation Site Requirements for 90-day Areas

Also see: 40 CFR 264.171 *et seq.*/22 CCR 66264.171 *et seq.*

- Containers must be in good condition and compatible with the waste
- Containers must be kept closed at all times unless adding/removing waste
- Containers must be marked "hazardous waste"
- Information must be clearly visible for inspection

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Generator/Accumulation Site Requirements for 90-day Areas

- Must Develop a Contingency plan (pursuant to 40 CFR 265.50 et seq.)
- "No smoking" signs must be conspicuously placed where there is a hazard from ignitable or reactive wastes

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Generator/Accumulation Site Requirements for 90 & 180-day Areas

- Date first drop of waste placed in container must be marked at long term storage area
- Must be inspected weekly
- Wastes must not be placed near incompatibles
- Ignitable or reactive wastes must be located at least 50 ft. from property boundary (LQG only)
- Ignitable and reactive wastes must be placed away from sources of ignition or reaction
- Information must be clearly visible

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90/180-Day Area Safety Equipment Requirements

- Portable fire extinguisher
- Fire control equipment
- Spill control equipment
- Decontamination equipment
- Water at adequate volume/pressure to supply water hose streams
- Hazardous Waste Contingency Plan

40 CFR 264.32, 22 CCR 66264.32, 22 CCR 66264.51

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90/180-Day Area Safety Equipment Requirements

- Foam-producing equipment
- Automatic sprinklers or water spray systems, and
- A sign or placard identifying site point of contact/emergency coordinator/fire department phone number
- Adequate aisle space allowing unobstructed movement of emergency staff

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Preparedness & Prevention: Communication

"Immediate Access" to an Internal Alarm or "emergency communication device" when:

- Pouring, mixing, spreading HW
- Cell phones do not suffice

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Written Contingency Plan Contents

The written contingency plan must, at a minimum, describe:

- Specific actions that facility personnel must take in response to the emergency
- Arrangements for emergency response with local emergency response authorities (e.g., fire and police departments, hospitals, local hazmat response teams). Name, address, and home and office telephone numbers of the facility's primary emergency coordinator
- Names, addresses, and home and office telephone numbers of all other personnel qualified to act as emergency coordinator, listed in the order that each will assume responsibility as the emergency coordinator
- Up-to-date list and location of all emergency response equipment at the facility, including a physical description of each item and an outline of its capabilities
- Personnel evacuation plan

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Distribution of Copies

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A copy of the generator's contingency plan must be kept on-site. The plan also must be sent to:

- Local fire and police departments
- Local hospitals
- Local emergency response team
- State emergency response team
- State environmental agency

40 CFR 264.53 &40 CFR 265.53

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Generator & Tank Accumulation

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Additional requirements for tanks:

- Must have sufficient structural strength
- Must be compatible with wastes accumulated
- System must be able to detect and collect releases
- Secondary containment
- Must meet Subpart CC air emission standards (40 CFR 264.1080 & 22 CCR 66264.1080)
- Must meet Subpart BB for associated piping and pumps

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Generator & Tank Inspection Requirements

Must inspect tank systems daily for:

- Overflow and spill control equipment (in good working order)
- Above-ground portions (to detect corrosion or releases)
- Data gathered from monitoring & leak detection equipment (to ensure tank operated according to design)
- Construction materials and surrounding area (to detect erosion or signs of release)
- Secondary containment and leak detection
- Secondary Containment Exemption: Some aboveground piping & ancillary equipment if inspected daily (22 CCR 66265.193 (m)

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Generator Requirements: Waste Minimization

- **Pollution Prevention Act of 1990**
  - Establishes pollution prevention as federal policy
  - Resulted in addition of waste minimization reporting to SARA Title III reporting
- **EPA Industrial Toxics Program**
  - 17 industrial toxics targeted for reduction
- **Main goals of waste minimization programs**
  - Reduce volume AND
  - Reduce toxicity

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LQG Waste Minimization/SB 14

Hazardous waste source reduction and management review act of 1989 (SB 14):

- Applies to generators of > 12,000 kg/yr. of hazardous waste or > 12 kg/yr. of extremely hazardous waste
- Requires preparation of analyses and reports documenting waste minimization efforts
- First reports were due by September 1, 1991 (and every four years thereafter)
- Health & Safety Code 25244.12 *et seq*.

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SB 14 Requirements

Source reduction measures reduce the volume of waste generated or reduce the toxicity of a waste stream. There are five types of source reduction:

- Process modification
- Materials substitution
- Housekeeping improvements
- On-site recycling
- Waste segregation

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SB 14 Requirements

Typical Activities:

- Anti-freeze recycling
- Used oil recycling
- Solvent recycling
- Solid waste recycling
- Red rags recycling

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Generator Recordkeeping & Reporting Requirements

Keep Records for 3 years:

- Manifests (including land ban certi
- Biennial Reports
- Waste analysis
- Inspections
- Training received

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Generator Recordkeeping & Reporting Requirements
(40 CFR 262.41)

Reporting

- Off-site shippers must prepare report every other year
- Biennial Report due March 1 (even numbered years)
- List all wastes transported
- Describe waste minimization efforts
- Must keep records of any test results or waste analyses

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Generator Reporting & Record keeping Requirements

- Generator records (e.g., manifests, waste analysis) required by law to be kept three years but…
- Never destroy records because of potential enforcement or liability issues
- Weekly inspection records (for TSDFs & 90/180 day storage areas)
- Accumulation site logs (recommended)

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Reporting

- **Biennial Report Due**
  - March 1 of even numbered years:
- **Exception report:**
  - **LQG:** Initiated when generator does not receive copy of manifest signed by TSDF within 45 days of transport
  - **SQG**: Must send a legible copy of the manifest, with some indication that the SQG has not received confirmation of delivery to EPA Regional Administrator if signed copy of manifest is not received within 60 days of the date the waste was accepted by the initial transporter

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Generator Reporting & Recordkeeping Requirements

Waste manifests (off-site transport)

- Tracks wastes from generator to disposal facility **(LQG/SQG)**
- Must contact facility within 35 days if signed manifest is not returned

(LQG)

- If the returned manifest is not received within 45 days, must submit exception reports, including copies of manifests and cover letter **(LQG)**
- Must keep copies of manifests and exception reports for three years **(LQG)**
- Generators and TSDF operators responsible for loading HW must ensure transporter is lawfully authorized to operate vehicle by verifying (H&SC 25160.7):
  - Possession of appropriate class of driver's license; and
  - Other endorsements

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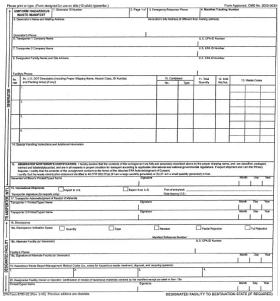
The Hazardous Waste Manifest System

Required document to move hazardous waste off-site

Uniform Hazardous Waste Manifest:

- EPA required
- Tracks "cradle to grave"
- Meets DOT requirements of a hazardous materials shipping document



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Waste Codes

CA has its own system of HW codes

- These waste codes are descriptions of different categories of HW and are required by different notification and recordkeeping and reporting rams.
- These codes can be found at Title 22 CCR Appendix XII to Chapter 12 of Division 4.5

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Waste Codes

- **Restricted Wastes** (711 – 801) e.g., Liquids with cyanides
- **Non-restricted wastes** (121 – 181) e.g., Alkaline solution without metals
- **Organics** (211- 352) e.g., Hydrocarbon solvents (benzene, hexane, Stoddard, etc..)
- **Sludges** (411 – 491) e.g., Degreasing sludge
- **Miscellaneous** (511 – 613) e.g., Baghouse waste
- **HW Report Management Methods** (H010 – H141) e.g., Solvents recovery

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Out of State HW Shipments

- CA generators that ship HW generated in California out of state are still subject to CA HW manifesting rams.
- Copes of the manifest must be sent to DTSC

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Manifests

(40 CFR 263/22 CCR 66263)

- Initiate form and sign it
- Both state and federal waste codes must be listed
- Transporter's signature & date of acceptance
- Retain copy
- Return copy
- Within 45 days of transport

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SQG Hazardous Waste Manifest

Initiate form and sign it:

- Employees responsible for shipping hazardous waste (i.e., who signs manifest) MUST receive DOT training!
- Transporter's signature & date of acceptance
- Retain copy
- Return copy
- Contact facility within 50 days if signed manifest is not returned
- If the returned manifest is not received within 60 days, must submit exception report, including copies of manifests and cover letter
- Must keep copies of manifests and exception reports for three years

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LQG Hazardous Waste Manifest

- Initiate form and sign it:
- Employees responsible for shipping hazardous waste (i.e. who signs manifest) MUST receive DOT training!
- Transporter's signature & date of acceptance
- Retain copy
- Return copy
- Contact facility within 35 days if signed manifest is not returned
- If the returned manifest is not received within 45 days, must submit exception report.

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- Must keep copies of manifests and exception reports for three years

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DTSC Manifest

- State's hazardous waste regulations incorporate federal rules that establish a new Uniform Hazardous Waste Manifest Form.
- Standardized the content and appearance of the manifest form and continuation sheet
- Making manifest forms available from more sources
- Adopting new procedures for tracking waste shipments on the manifest
- Adopting standardized handling codes
- Eliminating most state-only information fields
- Prohibiting states from requiring any other information to be added to manifests
- Necessary step in converting the paper system to an electronic one.
- Waste generated in or shipped to California must contain a CA state waste code
- Visit www.dtsc.ca.gov for mo.re information

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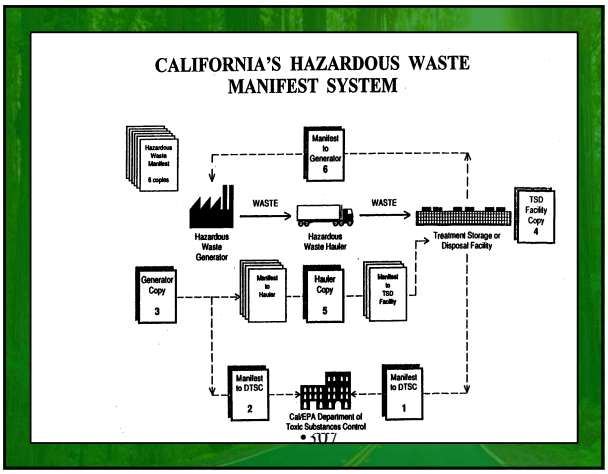

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Transporter Consolidated Manifest System

- Consolidated Manifest System can be used only for non-RCRA waste or for RCRA waste that is not required to be manifested, and with consent of generator
- Transporters registered with DTSC can combine on a single manifest the following wastes from multiple generators:
- Used oil
- Antifreeze
- Oil/water separation sludge
- Parts cleaning solvent
- Solids contaminated with used oil

H&SC 25160

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Transporter Consolidated Manifest System

Transporters registered with DTSC can combine on a single manifest the following wastes from multiple generators (continued):

- Brake fluid
- Paint-related waste
- Spend photographic solutions
- Hydroxide sludge contaminated with metals from waste water treatment
- Dry cleaning solvents
- Asbestos
- Inks
- Chemical and laboratory packs from schools
- Others

H&SC 25160

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DOT Required Training

(49 CFR 172.704)

DOT never directly states that "manifest training" is required, however, the same training required for handling hazardous materials is required for those hazmat employees executing hazardous waste manifests.

Training must include:

- General awareness/familiarization training to recognize and identify hazardous materials
- Function specific training
- Safety training:
- Emergency response
- Measures to protect employee from hazards which they may be exposed
- Methods and procedures for avoiding accidents
- Security awareness
- Initial training within 90 days of employment or change in job function and recurrent training (every 3 years) required.
- Recordkeeping of training required (retain for 3 years)

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Hazardous Waste Management Training

Land Disposal Restrictions

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Land Disposal Restrictions

Federal Land Disposal Restrictions (LDR) ("Land Ban")
(40 CFR 268/22 CCR 66268)

- Waste-specific Treatment Standards that Must be Met Before a Waste is Disposed of on Land (e.g., Placed in a Landfill, surface impoundment, injection well, land treatment facility, waste pile, etc..)
- Mixtures of Wastes Must Meet Standard Treatment for Each Waste in the Mixture

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Land Disposal Restrictions
LDR Generator Requirements

- Generator must determine whether waste is subject to LDR rules
- Pretreatment Obligation is on Disposer, but Generator Must Identify LDR-affected Wastes on Manifests
- **Generator must determine**:
  - What regulated underlying constituents and what concentrations are present in the HW and all applicable EPA HW ID numbers,
  - treatment standards or prohibition levels that compared to constituents and their concentrations in the hazardous waste:
    - i.e., wastewater or non-wastewater
    - i.e., subdivisions made within a waste code based on waste-specific criteria (e.g. D003 reactive cyanides)

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Hazardous Waste Management Training

Treated Waste Wood

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Treated Waste Wood Alternative Management Standards

Requirements:

- Adjusted for unique circumstances involving TWW
- Lessened storage requirements
- Extended accumulation periods
- Allows shipments without:
  - HW manifest
  - HW Hauler
- Allows disposal at specific no-HW landfills

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Businesses generating TWW Incidental to Normal Course of Business

- "Incidentally generated" where businesses not routinely involved in construction, demolition, or other activities involving TWW.
- Handling/Disposal Requirements:
- Keep TWW segregated from other materials
- Label TWW bundle/shipments with:
  - Treated Wood Waste –Do not burn or scavenge.
  - TWW Handler
  - Name:_____
  - Address: _____
  - Accumulation Date: _____

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Businesses generating TWW Incidental to Normal Course of Business (cont.)

- Store up to 1000 lbs. of TWW for up to 30 days
- Transport TWW to authorized TWW facility
- Identifying TWW to TWW facility personnel

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Generating TWW in Normal Course of Business

Applicability:

- Businesses generating, handling, accumulating 1000 lbs. in 30 days
- Engaged in activities expected to routinely generate/handle TWW (e.g., construction/demolition contractors)

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Generating TWW in Normal Course of Business

Requirements:

- **Storage**: off ground (on blocks, concrete surfaces, or containers):
  - Store up to 90 days (block and tarp)
  - Store up to 180 days (containment pad)
  - Store up to 1 year (container and storage building)
- Cover during inclement weather
- Accumulate away from public access
- Do not burn
- Segregate from other wastes

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Generating TWW in Normal Course of Business (cont.)

Requirements:

Label all TWW bundles/shipments with:

Treated Wood Waste – Do not burn or Scavenge

TWW Handler:

Name: _____

Address: _____

Accumulation Date: _____

Notify DTSC within 30 days if generating > 10,000 lbs. TWW

Train staff who handle TWW/keep training records for 3 years

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Hazardous Waste Management Training

Universal Waste

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What is a Universal Waste?

- Common batteries
- Pesticides
- Mercury-containing equipment, including thermostats
- Lamps, including fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps

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Universal Waste

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What is a Universal Waste?

Spent batteries, mercury-containing lamps (e.g., some fluorescent bulbs, mercury vapor lamps, and high intensity discharge [HID] lamps), mercury-containing appliances, mercury thermostats and switches

Unused pesticides – ***Fed but Not CA***

The following UWs are subject to regulation in California (22 CCR 66273.1):

- Batteries, as described in 22 CCR 66273.2(a)
- Electronic devices, as described in section 22 CCR 66273.3(a)
- Mercury Containing Equipment (MCE), as described in 22 CCR 66273.4(a)
- Lamps, as described in 22 CCR 66273.5(a) (including, but not limited to, M003 wastes)
- Cathode Ray Tubes (CRTs) as described in 22 CCR 66273.6(a)
- CRT glass, as described in 22 CCR 66273.7(a)
- Non-empty aerosol cans, as described in CH & SC 25201.16
- Cal/EPA's DTSC administers and enforces the universal waste (UW) rules in California
- Sometimes the local CUPA must be notified of UW activities

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Universal Waste Overview

- Types of universal waste
- How to manage universal waste
- How long you can store universal waste
- How to respond to spills of universal waste

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Universal Wastes

(Batteries, Pesticides, Lamps & Mercury-Containing Equipment)

Alternate standards for waste:

- Management
- Marking
- Labeling
- Transportation
- Training

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Universal Wastes

(Batteries, Pesticides, Fluorescent Bulbs & Thermostats) (40 CFR

Alternate standards for wastes:

- Management
- Marking
- Labeling
- Transportation
- Training

Handlers are either:

- Large quantity handlers (>5,000 Kg or 11,111 lbs.)
- Small quantity

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	SQHUW	LQHUW
Quantity limit	< 5,000 kg on site §273.6	≥ 5,000 kg on site §273.6
EPA Identification Number	Not required §273.12	Required §273.32
On-site accumulation limit	< 5,000 kg §273.6	No limit
Storage time limit	1 year, unless for proper recovery, treatment, or disposal §273.15	1 year, unless for proper recovery, treatment, or disposal §273.35
Manifest	Not required §273.19	Not required, but must keep basic shipping records §273.39
Personnel training	Basic training §273.16	Basic training geared toward employee responsibilities §273.36

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Are Your Universal Wastes Stored Properly?

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When Does Something Become a Universal Waste?

- **Batteries and mercury-containing equipment become waste the day the material is discarded**
- **Lamps become waste the day they are permanently removed from the fixture**
- **Recalled pesticides become waste the day:**
  - The generator of the recalled pesticide agrees to participate in the recall
  - Person conducting the recall decides to discard pesticides

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Who is Regulated in California?

- Conditionally Exempt Small Quantity Universal Waste Generator (CESQUWG) =
  - Generates less than 100 kilograms (kg) (220 pounds (lb.)) of RCRA hazardous wastes, including universal wastes, and no more than 1 kg (2.2 lb.) of acutely hazardous waste in any calendar month; *and*
  - Remains in compliance with 40 CFR 261.5
- **CESQUWG Waste:**
  - Unlike the federal rules, **all** universal waste **must** be sent to a recycling facility
  - CESQUWGs, however, are **exempt** from the requirements applicable to UWHs provided they comply with certain universal waste management requirements

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How Long Can I Store Universal Waste?

- Hold until the container is full or no more than 1 year from the time waste is first put in the container
- Must be able to document length of time universal waste is on-site
- Thus, the reason to date the container

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UW Spill Response

(40 CFR 273.17, 273.37 and 273.54)

- If the release is within your capability, knowledge, and training to clean it up, immediately contain releases and residues
- Determine whether any material resulting from the release is hazardous waste and, if so:
  - Manage the HW in compliance with the standards set forth at 40 CFR 260 – 272
  - Comply with the requirements applicable to HW generators under 40 CFR 262

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How Do I Manage Universal Waste Batteries?

(40 CFR 273.2 and 273.9)

Properly store as follows:

- Contain any UW battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
- Keep container closed, structurally sound, compatible with contents, and free of leaks or spills

Permissible handling activities:

- Sort batteries by type
- Discharge batteries to remove electrical charge
- Regenerate used batteries
- Disassemble batteries or battery packs
- Remove batteries from consumer products
- Remove electrolyte from batteries – but handler must determine whether the electrolyte exhibits a HW characteristic

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How Do I Manage Universal Waste Batteries?

(

- **Label the container** (40 CFR 273.14 & 273.34)
  - "Universal Waste - Batteries (and type, e.g., alkaline, lithium, etc..)"
  - "Waste Battery(ies)"
  - "Used Battery(ies)"
- Date the container on the day the battery is placed into it
- Does not include lead-acid batteries

40 CFR 273.2 and 273.9

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How Do I Manage Universal Waste Lamps?

40 CFR 273.5 and 273.9

- Manage in a way that minimizes lamp breakage and prevents release
- Store in containers that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps
- Keep containers and packages closed and be sure they lack evidence of leakage, spillage, or damage.
- Immediately clean up any lamp that is broken or shows evidence of breakage, leakage, or damage that could cause release of mercury or other hazardous constituents.
- Label the container (40 CFR 273.14 & 273.34)
  - "Universal Waste - Lamp(s)"
  - "Waste Lamp(s)"
  - "Used Lamp(s)"
- Date the container on the day the lamp is placed into it

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Lead Acid Batteries

Management of lead acid batteries is exempt from certain requirements of the HWCA if one of the following applies (22 CCR §66266.81):

- Persons who manage 10 or fewer batteries, if the batteries are to be recycled
- Persons who transfer batteries to a person who accepts spent batteries in exchange for new batteries
- Persons who accept spent batteries in exchange for new batteries, if certain quantity and time limits are not exceeded, and electrolyte is not removed
- Persons who transport mo.re than 10 batteries, if bills of lading are used to transport the batteries, and the batteries will eventually be recycled
- Persons who store batteries and transfer them offsite for recycling, if certain quantity and time limits are not exceeded, and electrolyte is not removed

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How Do I Manage Universal Waste Lamps?

40 CFR 273.5 and 273.9

- Manage in a way that minimizes lamp breakage and prevents release
- Store in containers that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps
- Keep containers and packages closed and be sure they lack evidence of leakage, spillage, or damage.
- Immediately clean up any lamp that is broken or shows evidence of breakage, leakage, or damage that could cause release of mercury or other hazardous constituents.
- Label the container (40 CFR 273.14 & 273.34)
  - "Universal Waste - Lamp(s)"
  - "Waste Lamp(s)"
  - "Used Lamp(s)"
- Date the container on the day the lamp is placed into it

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UW Lamps in California

- California is more specific than federal for UW lamp management
- Lamps covered by the state universal waste rules are
- Lamps that exhibit a characteristic of a hazardous waste
- Mercury-added lamps that meet listing description M003 in 22 CCR 66261.50
- Products that contain lamps and/or mercury-added lamps
- In addition to the federal rules a UWH may remove universal waste lamps from a product or structure only if it can be done without breakage
- Notification, annual reporting, and recordkeeping is also required

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How Do I Manage Universal Waste Mercury Containing Equipment (MCE)?

- Includes thermostats, barometers, temperature gauges, water treatment gauges, etc., but excludes batteries and lamps.
- Properly store as follows:
- Keep well contained, keep containers closed and be sure containers are structurally sound, compatible with contents and lack evidence of leakage, spillage, or damage.
- Can remove ampules from equipment in a manner designed to prevent breakage
- Label the container (40 CFR 273.14 & 273.34)
- "Universal Waste – Mercury-Containing Equipment"
- "Waste Mercury-Containing Equipment"
- "Used Mercury-Containing Equipment"
- For thermostats or containers containing only mercury-containing thermostats:
- "Universal Waste – Mercury Thermostat(s)"
- "Waste Mercury Thermostat(s)"
- "Used Mercury Thermostat(s)"
- Date the container on the day the thermostat is placed into it

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UW Mercury-Containing Equipment in California

- California regulates: **mercury-containing products** that are hazardous wastes when discarded
- California added numerous common mercury-containing products that may be managed under the universal waste rules - 22 CCR 66273.4(c)

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How Do I Manage Universal Waste Pesticides?

40 CFR 273.3 and 273.9

Properly store as follows:

- Store in closed, structurally sound container that is compatible with contents and free of leaks or spills, OR
- In a container with an overpack that is structurally sound and compatible, OR
- In a tank the meets hazardous waste standards of 40 CFR 265, OR
- In a transport vehicle - closed, sound, compatible with pesticide, and no leaks
- Label the Container (40 CFR 273.14 & 273.34)
- "Universal Waste - Pesticide(s)"
- "Waste Pesticide(s)"
- Date the container on the day the pesticide is placed into it

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How Do I Manage Cathode Ray Tubes (CRTs)?

Federal:

- Used, ***unbroken*** CRTs are not regulated as hazardous or universal waste unless they are stored for more than a year.
- Used, ***broken*** CRTs are not regulated as hazardous or universal waste as long as the following conditions are met:
- CRTs are not stored for more than a year and not speculatively accumulated; and
- CRT containers are clearly labeled with "**Do not mix with other glass materials"** and with one of the following phrases:
  - "Used cathode ray tube(s) contains leaded glass" or
  - "Leaded glass from televisions or computers"
- CRTs are safely transported in containers designed to minimize releases and labeling as described above

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UW Cathode Ray Tubes (CRTs) in California

- CRTs and CRT glass are separate categories of universal waste
- CRT devices in CA are now included in the definition of "electronic device"
- If the UWH plans to treat and/or recycle CRTs or CRT glass, the handler must remove CRTs from electronic devices

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How Do I Manage Universal Waste CRTs?

California:

Properly store as follows:

- Store smaller CRTs in closed, structurally sound container that is compatible with contents and free of leaks or spills
- Label the Container:
  - "Universal Waste - CRTs"
- Date the container on the day the CRT is placed into it

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How Do I Manage Aerosol Cans?

- Under federal regulations, aerosol cans are not universal waste.
- A steel aerosol can that does not contain a significant amount of liquid would meet the definition of scrap metal (40 CFR 261.1(c)(6) and would be exempt from RCRA regulation if it were recycled, even if it is hazardous.
- Any liquids or contained gases removed from aerosol cans may be subject to regulation as a hazardous waste.
- In order to dispose of a can as non-hazardous waste (rather than recycle it), a generator must determine if the can is empty under 40 CFR 261.7 (or that the product it contained was not hazardous) and that the can is not hazardous.

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How Do I Manage Universal Waste Aerosol Cans?

Properly store as follows:

- Contain leaks, spillage, and/or damage
- To prevent fire, explosion, and unauthorized release (store with sufficient ventilation
- Keep container closed, structurally sound, compatible with contents, and free of leaks or spills
- Store away from incompatible materials
- Keep flammable wastes a safe distance from heat and open flames
- Label the container
- "Universal Waste –Aerosol cans"
- Date the container on the day the aerosol can is placed into it
- Processing the contents of the aerosol can requires agency approval and permitting

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Universal Waste Aerosol Cans

H&SC §25201.16

Non-empty hazardous waste aerosol cans may be managed as universal wastes

- Upon receipt of a universal waste aerosol can by a treatment or disposal facility, the can is no longer a universal waste aerosol can, but becomes a hazardous waste aerosol can

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Universal Waste Aerosol Cans: Accumulation/Transport

Requirements for containers used to accumulate/transport universal waste aerosol cans:

- Must be structurally sound and show no evidence of leakage
- Must be placed in a ventilated location
- Incompatible materials must be kept segregated
- Flammable wastes must be kept at a safe distance from heat and flames
- Container must be labeled
- Container holding cans that have been processed or shipped must be kept closed and on a surface impervious to leaks

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Universal Waste Aerosol Cans: Processing

"**Processing**": puncturing, draining, or crushing of aerosol cans

- Universal waste handler may process universal waste aerosol cans if the following requirements are met:
  - Handler is not an offsite commercial processor
  - Unit used to process cans is placed on a floor impervious to leaks
  - Handler develops written operating procedure and training program for safe processing
  - Spill cleanup kit is available
  - Contents of can immediately transferred to appropriate container
  - Processing area is well ventilated
- Handler must determine whether contents of can exhibit a characteristic of hazardous waste
  - If so, they must be managed as hazardous waste
  - Handler must submit notification to CUPA

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Household Hazardous Wastes

- 2000: DTSC adopted regulations governing universal waste; created a 4 year exemption for households and small businesses (≤ 50 employees).
- February 8, 2006: exemption expired.
- **Today**: households and small businesses must recycle or properly dispose of household hazardous wastes including:
  - Common batteries (AA, AAA, C and D cells)
  - Mercury-containing fluorescent lights/lamps
  - Thermostats and thermometers
  - Small electronics
  - Stoves, ovens, water heaters, etc.
- Improperly disposed of these items can result in groundwater contamination from mercury, lead, acid, zinc, cadmium and other toxins.
- CIWMB recently proposed the allocation of $4.5 million in grant money available to ease the transition; awaiting approval.

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UW Training in California

- California follows the federal rules but distinguishes between training requirements for personnel who handle universal waste from off-site sources and those who handle universal waste generated from on-site sources
  - Waste from Off-Site Sources
  - Any person who consolidates, sorts, treats, recycles, packages for transport, offers for transport, or physically relocates containers of universal waste
  - Waste from On-Site Sources
  - A person who happens to handle UW due to some portion of the job from on-site source.
    - e.g., an office worker who removes spent batteries from an electronic device
- Training of Personnel Who Manage Universal Waste from Off-Site Sources
- A UWH must initially train and provide annual training to all personnel who manage or who supervise those who manage universal wastes from off-site sources

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UW Training in California

- **Training must include, at a minimum:**
  - Types of hazards associated with the universal waste, e.g., hazards due to leaded glass in CRT devices or CRTs
  - The proper disposition of universal wastes managed at the facility, e.g., the locations of universal waste containers or the location of a centralized universal waste accumulation area)
  - The proper procedures for responding to releases of universal wastes, e.g., spilled CRT glass
- The applicable universal waste requirements regarding:
  - Labeling, collecting, handling, consolidating, and shipping universal wastes at the facility
  - The prohibition on the disposal of universal wastes, and
  - For personnel involved in shipping universal wastes who are "hazmat employees," as defined in 49 CFR 171.8, the applicable requirements prescribed in 49 CFR 172.704.

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UW Training in California

Recordkeeping

- The UWH must maintain a written record
  - Date and names of personnel receiving information
- Records must be maintained for at least 3 years from the date the person last managed any universal waste at the facility.
  - e.g., list of personnel who have received either initial or annual training info.
- The record of training for a "hazmat employee," as defined in 49 CFR 171.8, must meet the applicable requirements of 49 CFR 172.704(d).
- The training record may accompany a person who is transferred within the same company.

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How Do I Respond to Spills of Universal Waste?

- If a release of universal waste is beyond your control, call 911
- If the release is within your capability, knowledge, and training to clean it up, contain all releases & other spill residues and label the container
- All hazardous waste residual must be handled as hazardous waste

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Definition of Treatment

(40 CFR 260.10/22 CCR 66260.10)

"Treatment" means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

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Treatment, Storage, and Disposal Facilities (TSDF)

(40 CFR 264 (265), 22 CCR 66264 (66265), 40 CFR 270 and 22 CCR 66270)

All TSDFs must have either interim status or a permit

- Interim status was regulatory mechanism to bring TSDFs under immediate compliance (requires part A application)
- Intent is to then bring TSDFs up to permit status following approval of the part B (operation plan) application

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Hazardous Waste Tiered Permitting
Treatment/Storage

California has a 5-tier permitting program for facilities that treat, store, or dispose of hazardous waste

Requirements imposed upon each category of facility depends on the degree of risk they pose

The tiers (in descending order of regulatory oversight):

1. Full permit tier (Federally-equivalent) (T, S, D) OFF-SITE
2. Standardized permit tier (T, S) OFF-SITE
3. Permit by rule tier (T) ONSITE
4. Conditional authorization tier (T) ONSITE
5. Conditional exemption tier (T) ONSITE

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PCB Regulations

- PCBs > 50 ppm are Regulated Under the Federal Toxic Substances and Control Act (TSCA) and Regulations at 40 CFR Part 761
- TSCA not Delegated to States
- Regulates PCBs in Varying Matrices
- Establishes Storage, Treatment, Disposal, and Spill Response Regulations or Policies
- Establishes Requirements for Chemical Waste Landfills and Incinerators

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California PCB Regulations

In California, PCBs are Hazardous Wastes at Concentrations > 5 ppm and are Regulated under HWCL

Therefore:

- PCBs < 5 ppm are not Regulated by HWCL or TSCA
- PCBs 5 – 50 ppm are California-only Hazardous Wastes
- PCBs > 50 ppm are California Hazardous Wastes and are Regulated under TSCA

Watch for electrical equipment and Light Ballasts

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PCB Manifest Requirements

- Generators, transporters, brokers, storers, and disposers of PCB wastes are required to complete a manifest for "cradle-to-grave" tracking of PCB wastes containing more than 50 ppm PCBs. 40 CFR 761.205 to 761.211
- The PCB manifest system also requires the owner or operator of the disposal facility to prepare a Certificate of Disposal for the PCBs and PCB items disposed of at the facility. 40 CFR 761.218
- A generator of PCB waste must submit an Exception Report to the EPA regional administrator for the region in which the generator is located if the generator has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 45 days of the date the waste was accepted by the initial transporter. 40 CFR 761.215

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Annual Document Logs

Annual document logs must be kept if you have:

- 50 or more capacitors (in use or storage)
- One or more PCB transformers
- 45 kg (99.4 lb.) or more PCBs in PCB containers

This log, & the corresponding annual reports, must be maintained for at least 3 years after the facility ceases using or storing PCBs and PCB items in regulated quantities.

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Annual Document Log Contents

- All signed manifests generated by the facility.
- All Certificates of Disposal that have been received by the facility.
- Records of inspections and cleanups.
- The name, address, and EPA ID number of the facility covered by the annual document log.
- The total number by specific type of PCB articles and the total weight in kg of PCBs in PCB articles remaining in service at the end of the calendar year.
- The total number of PCB article containers and total weight in kg of the contents of PCB article containers remaining in service at the end of the calendar year.
- The total number of PCB containers and the total weight in kg of the contents of PCB containers remaining in service at the end of the calendar year.

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CUPA Clarifications

SB 612 (Jackson)

- Establishes due process for persons assessed administrative penalty pursuant to Medical Waste Management Act
- CUPA must certify to OES every three years it conducted area plan review & made any necessary revisions.

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Hazardous Waste Management Training

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Spills & Releases of Hazardous Waste

- In the event of a release of hazardous waste
  - Contact the Shift Supervisor
  - Restrict access
  - Determine if a "flight or fight" response is appropriate
  - Seek help if needed
  - Try to determine what has been released

- If safe to do so:
  - Determine personal protective equipment requirements
  - Contain, dike, or divert released material
  - Stop the source

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Spill Prevention/Response to Emergencies

Contingency plan includes:

- Emergency response procedures for incidents:
  - i.e., spills, leaks, and environmental contamination
- Emergency response procedures for hazardous waste fire or explosion
- Hazardous waste spill reporting procedures and requirements
  - 40 CFR 264, Subpart D,
  - 40 CFR 265, Subpart D,
  - 40 CFR 279.52

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Small Spill Response

- Use good, conservative judgment in deciding to respond:
  - your self or
  - to sound the alarm
- Notify on-scene Coordinator (call Fire Department)
- Then notify immediate supervisor

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Reporting a Spill

Provide as much of the following information as possible:

- name and phone extension
- location of spill
- name of spilled material
- amount spilled
- rate spill is migrating
- extent of spill
- injuries (if any)
- time spill occurred

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After Reporting Spill

- Stop the spill (if it is safe to do so)
- Make spill scene off-limits
- Evacuate endangered areas
- Shut off power

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Hazardous Waste Agency Findings and Fines

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California Hazardous Waste Penalties

- DTSC regulations guide DTSC and CUPAs in imposing administrative penalties
- Criteria are based on violation's potential harm and extent of deviation from HW regulations
- Types of violations:
  - "Major"
  - "Moderate"
  - "Minimal"

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Civil and Criminal Penalties

- **New Federal Penalty: $105K** per day/per violation
- **Minor violations**: can incur penalties up to **$70,000** per day if corrective action orders are ignored.
- **Class II violations**: incur up to **$70,000** per day per violation.
- **Knowing, willful and intentional violations**: may trigger penalties up to **$100,000** per day, or **$250,000** per day and imprisonment if violations cause serious bodily injury or death.
- **Criminal Penalties**: Criminal misdemeanor charges, punishable by up to **$1,000** in fines and up to **6 months imprisonment**.

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California Hazardous Waste Penalties (Cont.)

Imposition of penalty matrix

Factors considered:

- Economic benefit gained/cost of compliance avoided
- Violator's intent
- Initial penalties can be adjusted up or down based on:
  - Level of cooperation
  - Ability to pay
  - Other factors

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What's your Company's Compliance Risk?

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You will get:

1. Critical insight into your exposure
2. Understanding of strategy gaps
3. Road map to your next steps for assuring compliance

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Contact Me

Gary Lucks JD, CPEA

510-290-5423

gary@beyondcompliance.net

glucks@baylawgroupllp.com

www.beyondcompliancelaw.net

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