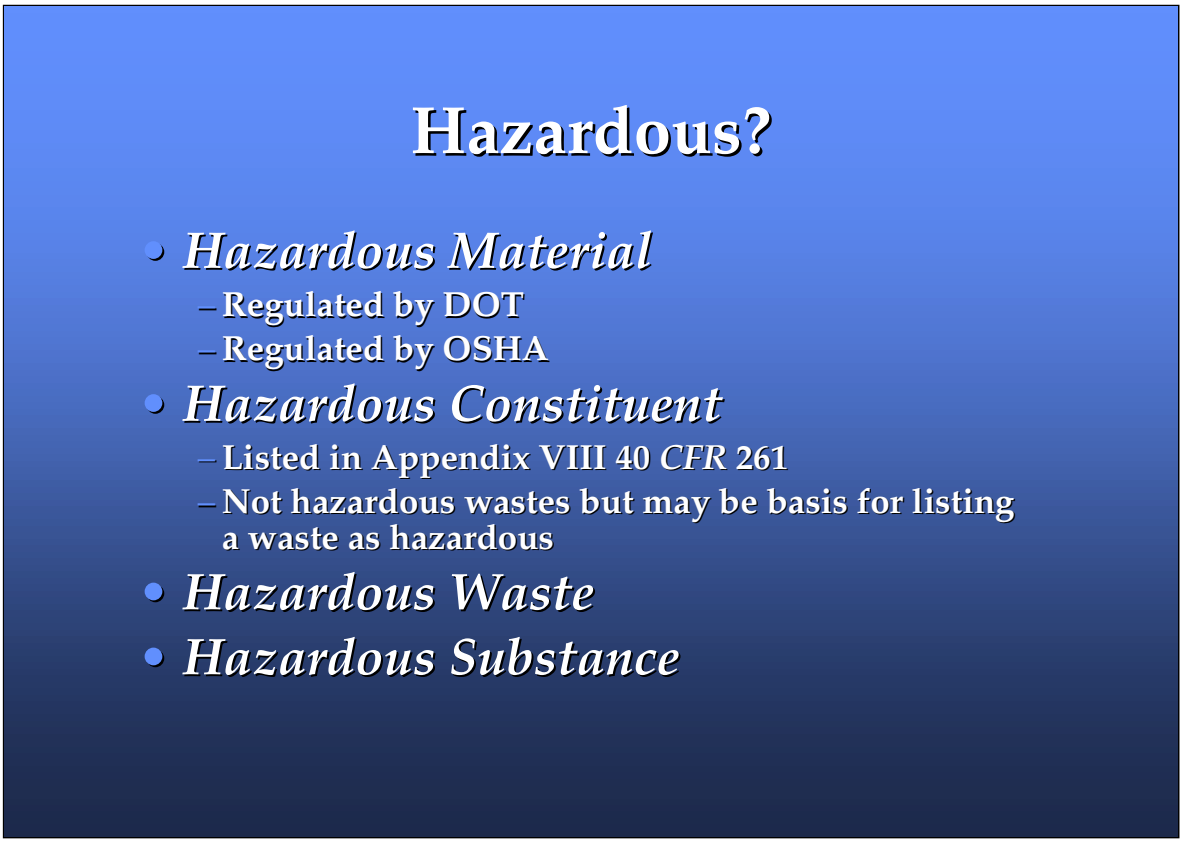
Hazardous Waste Definition

The paramount objective is to understand the entry point into RCRA Subtitle C jurisdiction. Waste identification and listing specifications are complex. At a minimum, you should be able to do the following by the completion of this module:

1. Define hazardous materials, hazardous waste, hazardous constituents, and hazardous substances. (p. 2)
2. Explain the hierarchy that is used to determine if solid wastes qualify as hazardous. (pp. 4-6, 15, 24-25)
3. Cite the listed hazardous waste codes. (pp. 7-11)
4. Define the most general version of the mixture rule and recognize that it has several specific exemptions. (pp. 12, 31)
5. Define the derived-from rule and its exemptions. (pp. 13, 32)
6. Explain the significance and use of the contained-in principle. (p. 14)
7. Restate the four characteristics of hazardous waste and recognize the RCRA definitions for each characteristic. (pp. 16-22)
8. Distinguish between “D” versus “F,” “K,” “P,” and “U” waste codes. (p. 6)
9. Recognize several materials that are excluded from the hazardous waste definition. (pp. 27-32)
10. List several types of recyclable materials. (p. 33)
11. Recognize the criteria for defining a container as “empty.” (pp. 35, 36)
12. Define “delisting.” (p. 37)



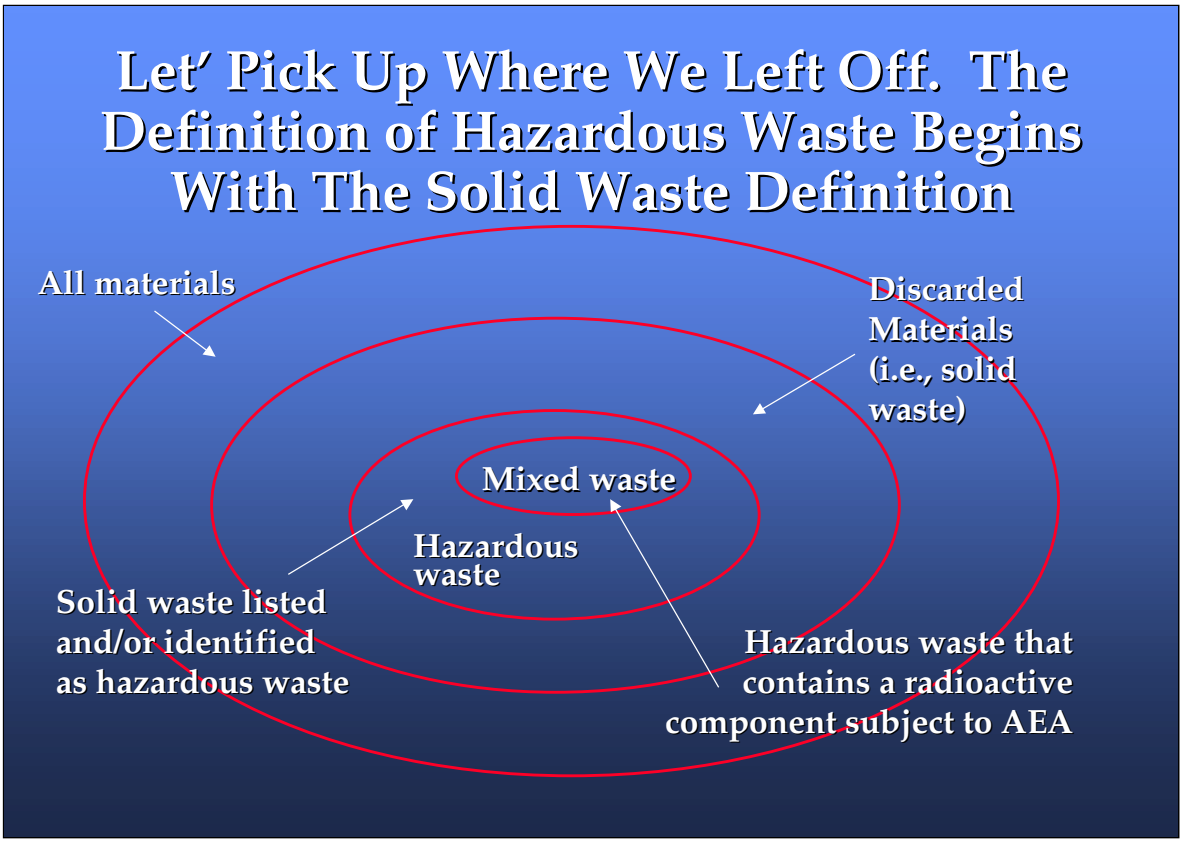
Before discussing specific elements of the definition of hazardous waste, it is important to start from a common understanding of definitions.

Hazardous materials, which can include both materials and wastes, are regulated by Department of Transportation regulations. These materials also include products in use that are regulated by the Occupational Safety and Health Administration standards for storage, handling, and personnel exposure.

Hazardous constituents are those chemical constituents that EPA considers in determining whether specific wastes should be regulated as hazardous wastes. The list appears in 40 CFR 261, Appendix VIII. Waste streams containing these constituents are not regulated as hazardous merely because the constituents are present. The waste stream must first be listed as hazardous, or be hazardous by characteristic. The presence of the hazardous constituents, however, would be the basis for promulgating a rule to list the waste stream as hazardous. So, all hazardous wastes contain hazardous constituents, but not all hazardous constituents are hazardous wastes.

Hazardous wastes are those solid wastes that meet criteria defined in 40 CFR Part 261 Subparts C and D.

Hazardous substances are substances listed in 40 CFR 302 for which facility owners/operators are responsible for release reporting and response.



Evaluating discarded materials to determine their hazard is a step-by-step process. Each question answered about the material leads to another set of questions until the material and RCRA's jurisdiction over it have been determined.

RCRA does not regulate all materials. It addresses a variety of materials, however, under specific circumstances.

Under Subtitle I, for example, RCRA regulates any material (product or waste) that (1) is a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or is a petroleum product, (2) is managed in an UST, and (3) is not regulated as a hazardous waste.

Under Subtitle D, RCRA regulates discarded materials that meet the definition of solid waste but do not qualify as hazardous waste.

Under Subtitle C, RCRA regulates discarded materials that both meet the definition of solid waste and are identified and/or listed as hazardous waste in 40 CFR Part 261, Subpart C and/or D. Therefore, RCRA-regulated materials are a subset of all materials managed at a facility. The larger subset is solid waste. Hazardous waste is a subset of solid waste. Moreover, mixed waste is a subset of hazardous waste.

Overview of the Definition of Hazardous Waste

- STEP 1: Is the waste excluded?
- STEP 2: Is the waste listed?
  - Is it a mixture of solid waste and listed hazardous waste?
  - Is it derived from the treatment, storage, or disposal of a listed hazardous waste?
  - Does it contain a listed hazardous waste?
- STEP 3: Is the waste a characteristic hazard?

A solid waste becomes a hazardous waste:

- when it meets a listing description
- when it exhibits a hazardous waste characteristic
- for a mixture, when it is mixed with a hazardous waste
- for a "derived-from" waste, when it is generated as a result of treatment, storage, or disposal

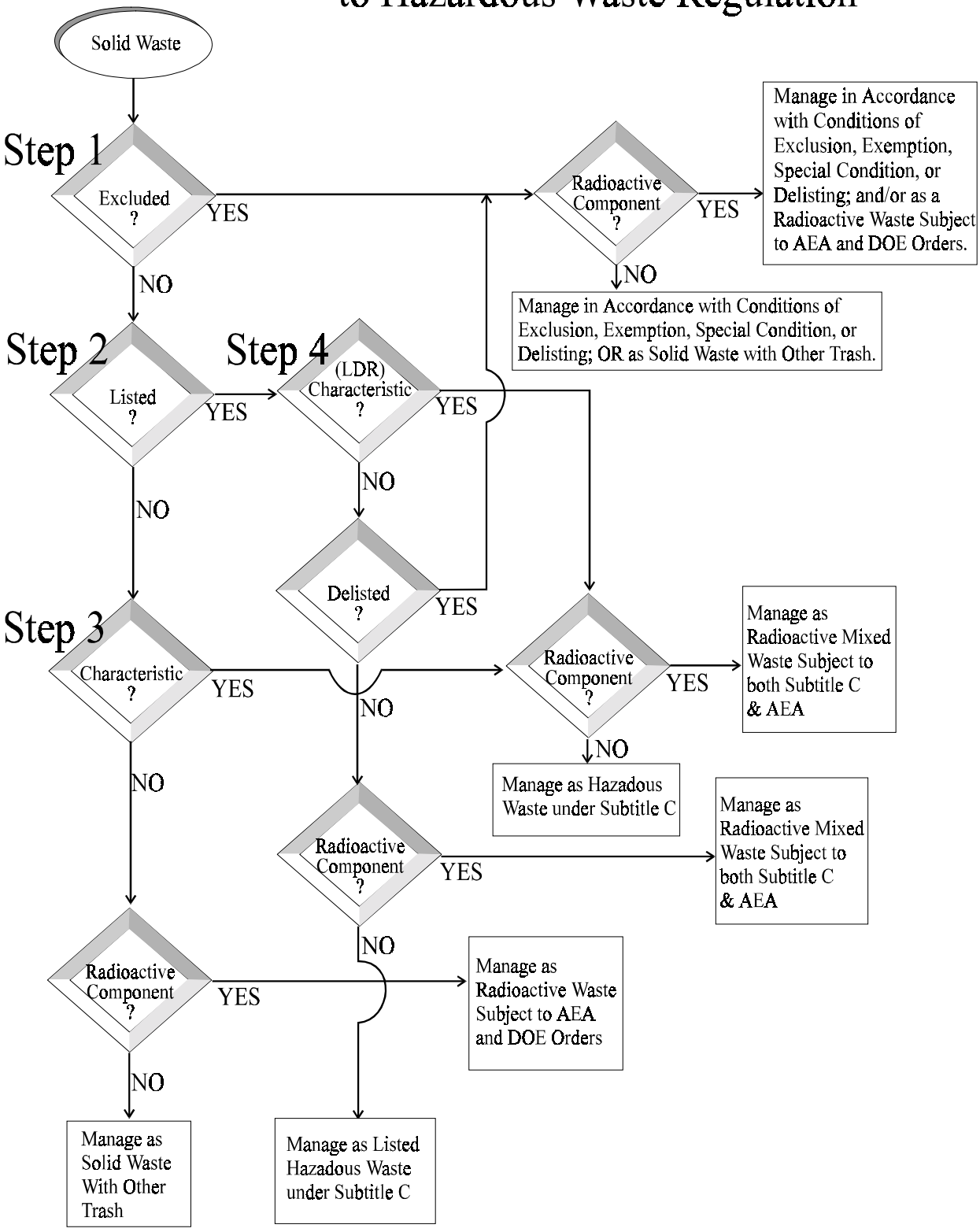
A hazardous waste ceases to be a hazardous waste:

- for a listed waste, when delisted under 40 CFR 260.22
- for a characteristic waste, when it no longer exhibits any hazardous characteristic

Under 40 CFR 262.11, generators of solid wastes must evaluate their wastes to determine whether the wastes are hazardous. EPA has established a hierarchy for performing this determination. Generators should first determine if the waste is excluded from regulation. If the waste is not excluded, the generator should evaluate the listings prescribed in 40 CFR Part 261, Subpart D to determine whether the waste meets a listing description. [To some, this hierarchy may appear to contradict the regulations' structure (i.e., Subpart C precedes Subpart D in the regulations).] Finally, if the waste does not meet a listing, the generator must determine whether the waste exhibits a characteristic identified in 40 CFR Part 261, Subpart C.

Figure 1 on the next page outlines the decisional framework to be followed when performing a generator determination. Although determining whether the waste is excluded is the first decision diamond, we will hold off on addressing this question until we have a foundational understanding of the individual hazardous waste listings and characteristics. Also, the implications of the "(LDR) Characteristics" determination (Step 4) will be addressed on Course Day 3.

Steps to Determine if A Solid Waste is Subject to Hazardous Waste Regulation



Two Alternative Mechanisms for Bringing A Solid Waste into the Hazardous Waste System

- Identification of Characteristics of Hazardous Waste
  - Ignitability
  - Corrosivity
  - Reactivity
  - Toxicity
- Listings of Hazardous Waste
  - Wastes from non-specific sources
  - Wastes from specific sources
  - Discarded commercial chemical products

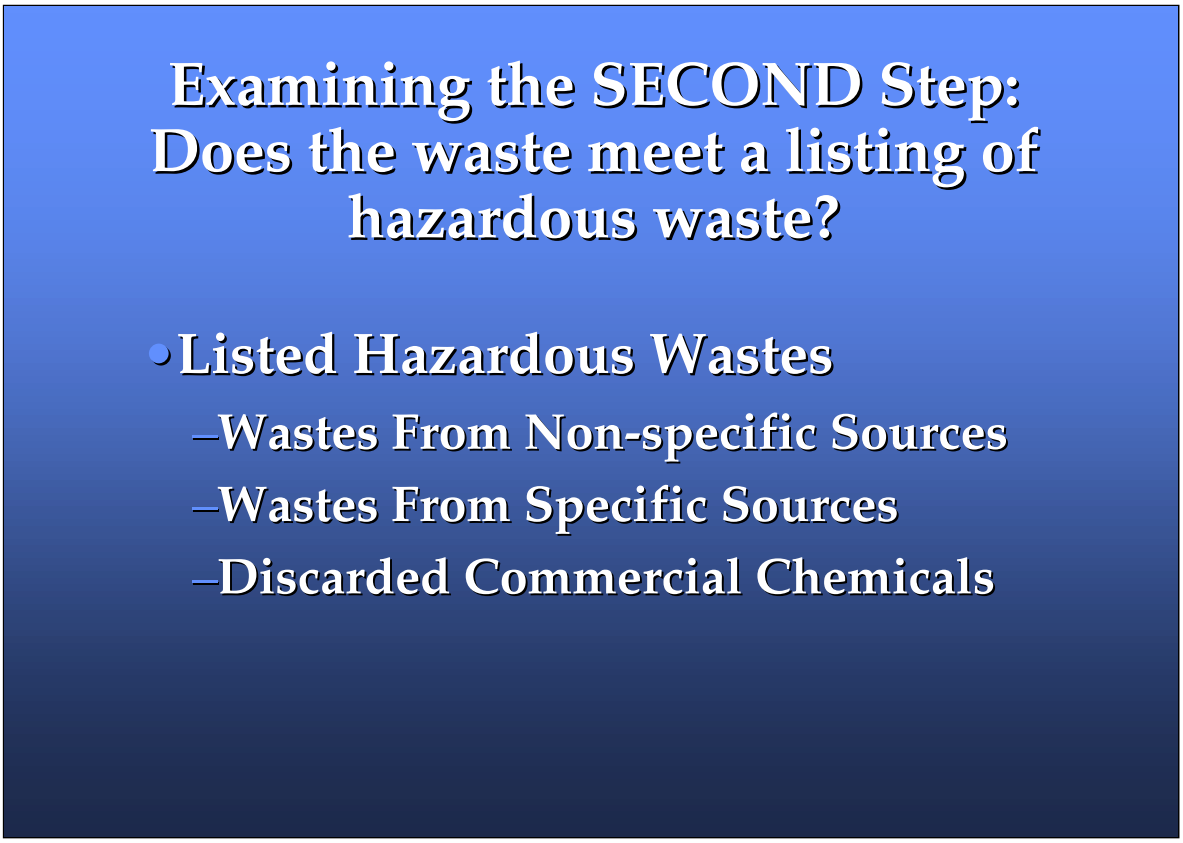
Before we examine the individual elements of the generator hazardous waste determination, it is useful to briefly introduce the two mechanisms that are used to bring a solid waste into the hazardous waste system -- identification through characteristics and listing.

Relative to identifying characteristics, Subpart C of 40 *CFR* Part 261 contains criteria for identifying characteristically hazardous wastes (D001-D043). These criteria are used to identify solid wastes that exhibit one or more of the following characteristics:

- Ignitability,
- Corrosivity,
- Reactivity, and/or
- Toxicity.

Subpart D of 40 *CFR* Part 261 contains the prescribed listings (F-, K-, P-, and U-lists) of hazardous waste.

It is important to note that although EPA designates characteristically hazardous waste using “D” codes, characteristic wastes do not qualify as “listed” hazardous waste. This distinction is very important when dealing with the “mixture” and “derived from” rules, as well as the “contained in” policy, all of which will be addressed during the listed waste discussion.



Returning to the illustration in Figure 1, the second decision diamond (i.e., Step 2) entails determining whether the waste meets a listing found in Subpart D. There are four lists of hazardous wastes in Subpart D of 40 *CFR* Part 261.

F-listed wastes -- Wastes from non-specific sources

30 "F" wastes

Examples: Spent solvents (tetrachloroethylene, trichloroethylene, carbon tetrachloride) from degreasing operations

K-listed wastes -- Wastes from specific industry sources

100 "K" wastes

Examples: "Oven residue from the production of chrome oxide green pigments"

"Distillation bottoms from the production of nitrobenzene by the nitration of benzene"

P-listed wastes -- Acute hazardous commercial chemical products, off-specification species, container residues, and spill residues

100 "P" wastes

Examples: Discarded aldicarb (a pesticide), phosgene, carbon disulfide, and methyl isocyanate

U-listed wastes -- Hazardous commercial chemical products, off-specification species, container residues, and spill residues

215 "U" wastes

Examples: Discarded acetone, benzene, creosote, DDT

(F-Listed)
Waste from Non-specific Sources
(40 *CFR* 261.31)

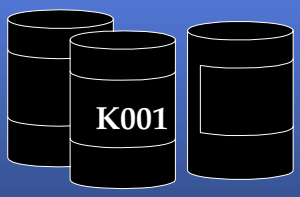
EPA Code	Waste
F001	Spent halogenated solvents from degreasing: tetra- and trichloroethylene, methylene chloride, trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons

The term "non-specific sources" means that the waste can be produced by any industry/activity. If a waste meets the description associated with the specific waste code, it bears that code. The constituent and the generating activity are both important in determining whether a waste qualifies under a specific waste code.

In the example above, the term "spent" is important. A material is spent when it has collected sufficient contaminants to prevent its reuse. The specific constituents are also important. If those specific constituents are present, but the material is not spent, the waste would not qualify as F001. If the material is spent, but it does not contain those specific constituents, it also would not qualify under F001.

Common "F" wastes for DOE facilities are spent solvents and spent electroplating wastes.

(K-Listed)
Waste from Specific Sources
(40 *CFR* 261.32)

EPA Code	Waste
	Bottom sediment sludge from treatment of wastewaters from wood preserving that uses creosote and/or pentachlorophenol

(P- and U-listed)
Listed Discarded Commercial Chemicals
(40 *CFR* 261.33)

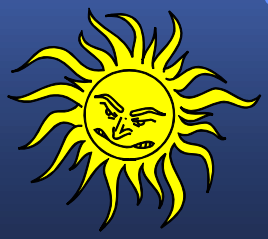
- Off-specification forms of these products
- Mixtures of these products and other materials that are applied to the land
- Mixtures of oil and these products when used as a fuel
- Containers holding these products, unless they are empty
- Spill residues of these products

The important terms to remember associated with discarded chemical products are "unused" and "sole active ingredient." Discarded commercial chemical products are chemicals that appear in 40 CFR 261.33 lists that have not been used and have only one active ingredient. They may include a large fraction of inactive ingredients.

Note also that the listing includes spill residues. If a chemical is spilled, the spill residue becomes discarded and will be hazardous by the waste code of the spilled chemical. If the spill residue involved one of the chemicals, such as acetone, that is listed solely because of a characteristic, the residue would be classified under the appropriate U-waste code, even if the residue were no longer characteristically hazardous.

Types of Listed Discarded Commercial Chemicals:

- "P" List
  - Acute hazardous waste
  - Examples are beryllium, methyl isocyanate, and soluble cyanide salts

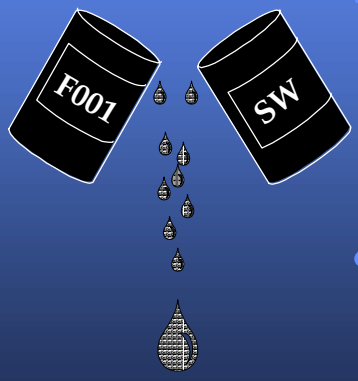


- "U" List
  - Toxic waste
  - Examples are benzene, saccharin salts, and trichloroethylene

The list of discarded commercial chemical products is divided into two categories, acute hazardous waste and toxic waste. The acute hazardous waste list, the "P" list, includes constituents that can cause injury or death with only small exposures.

The list of toxic chemicals, the "U" list, includes chemicals that are teratogenic, carcinogenic, mutagenic, and/or toxic but are not likely to be immediately dangerous to life.

Mixture Rule Wastes [40 *CFR* 261.3(a)]



- Mixtures of solid wastes with listed wastes
- Mixtures of solid wastes with characteristic wastes

"Mixture" refers to mixtures of solid and hazardous wastes and should not be confused with mixed waste.

When solid wastes are mixed with listed wastes, the resultant mixture is itself that listed waste. A mixture of solid wastes with listed wastes, if listed solely on the basis of a characteristic, is not hazardous when the resulting mixture no longer exhibits the characteristic. Also, if the listed waste is delisted, and is not a characteristic waste, it is no longer hazardous. When considering treatment options and management strategies, generators must remember that dilution of waste as a means to avoid treatment is prohibited under the land disposal restrictions (LDR).

Mixtures of solid wastes with characteristic wastes are only hazardous if the resulting mixture continues to exhibit a characteristic.

"Derived-From" Wastes [40 *CFR* 261.3(c)]

- **Definition**

Any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off) is a "derived from" waste.

A solid waste derived from the storage, treatment, or disposal of a listed hazardous waste is a hazardous waste.

A solid waste derived from the storage, treatment, or disposal of a characteristic hazardous waste is only a hazardous waste if it exhibits a hazardous characteristic.

"Contained-In" Principle

- Originally established to address contaminated media (e.g., soil)
- Exempts debris that the Regional Administrator, considering the extent of contamination, has determined is no longer contaminated with hazardous waste.

The contained-in policy was originally developed to address mixtures of listed waste and environmental media (e.g., contaminated groundwater). Such mixtures are not mixtures of solid waste and listed waste subject to the mixture rule. They are environmental media that contain listed waste. If the listed waste can be removed by treatment, all that remains is the soil or groundwater that was contaminated. This soil or groundwater can be returned to the environment. EPA and authorized states continue to determine when groundwater and soil no longer contain hazardous waste on a case-by-case basis under the contained-in policy interpretation.

In the August 18, 1992, FR notice (57 FR 37264), EPA codified the contained-in principle. Until promulgation of this final rule, the contained-in principle relied upon EPA-developed interpretive letters and memoranda. Under this rule, EPA both adopted a definition for debris containing listed waste (i.e., hazardous debris), thereby clarifying it is regulated under Subtitle C, and codified a corollary part of the contained-in principle. Relative to the codification, provided debris does not exhibit a characteristic of hazardous waste, EPA will determine on a case-by-case basis whether the debris, as generated or following treatment, is contaminated with (i.e., contains) hazardous waste. Debris that is no longer considered contaminated with hazardous waste is not subject to regulation [40 *CFR* 261.3(f)(2)].

Examining the THIRD Step: Does the waste exhibit any characteristic of hazardous waste?

Hazardous Waste Characteristics

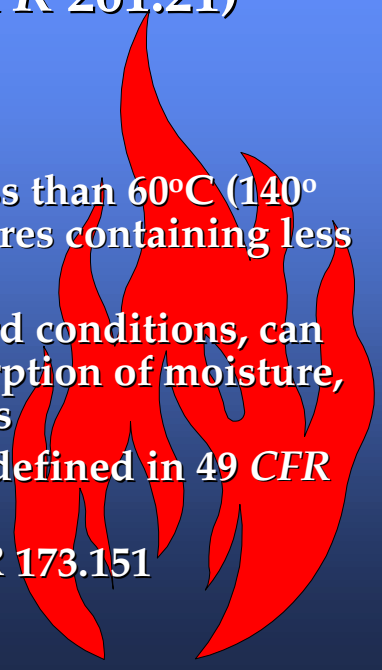
- Characteristics of Hazardous Waste
  - Ignitability
  - Corrosivity
  - Reactivity
  - Toxicity

There are currently four characteristics of hazardous waste identified in Subpart C of 40 *CFR* Part 261 :

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

In order for EPA to establish characteristics which render a waste hazardous, the characteristic must meet statutory criteria and either be measurable by available standard methods or be reasonably determinable based on knowledge of the waste.

Ignitable Hazard (40 *CFR* 261.21)



- D001
- A liquid with a flash point of less than 60°C (140° F), except aqueous alcohol mixtures containing less than 24% alcohol.
- A non-liquid that, under standard conditions, can cause fire through friction, absorption of moisture, or spontaneous chemical changes
- An ignitable compressed gas as defined in 49 *CFR* 173.300 (DOT)
- An oxidizer as defined in 49 *CFR* 173.151

Discarded paints and partially full spray cans of various materials are common examples of ignitable wastes. Some discarded solvents (e.g., some fractions of petroleum naphtha) are commonly discarded ignitable wastes. Strong oxidizers, such as potassium permanganate, are also considered ignitable wastes when discarded.

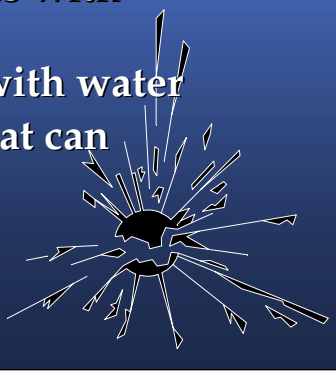
Corrosive Characteristic (40 *CFR* 261.22)

- D002
- Aqueous solution with a pH less than or equal to 2 or greater than or equal to 12.5
- A liquid that corrodes steel at a rate greater than 6.35 mm per year at 55 degrees C (130 degrees F)

Corrosive hazardous wastes must be liquids and include both highly acidic and highly basic solutions. These wastes include discarded solutions from nuclear fuel reprocessing, metal cleaning and etching, laboratory operations, and photographic processing. The RCRA criteria for corrosivity consider both the pH of the material as well as its overall corrosive behavior.

Reactive Characteristic (40 *CFR* 261.23)

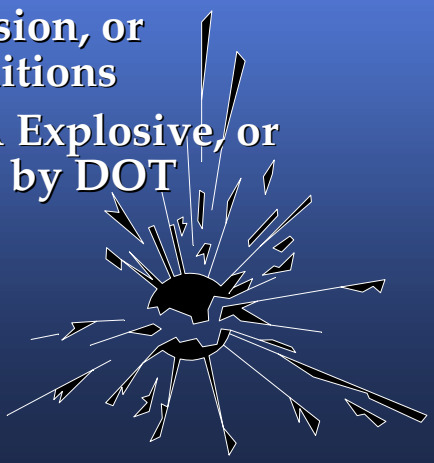
- D003
- Normally unstable and readily undergoes violent change
- Reacts violently with water
- Forms potentially explosive mixtures with water
- Generates toxic gases when mixed with water
- Cyanide or sulfide-bearing waste that can produce toxic gases



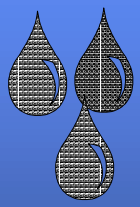
DOE's research and production facilities have many examples of reactive wastes. Among these are aged chemicals such as ethers and picric acid. Such aged chemicals can be sufficiently unstable to consider them Forbidden Explosives under Department of Transportation rules. In addition, explosives are occasionally a component of research projects. Water reactives such as solid sodium are also among the reactive wastes generated from DOE activities.

Reactive Characteristic (Continued)

- Capable of detonation if exposed to heat or a strong initiating source
- Capable of detonation, explosion, or reaction under standard conditions
- Forbidden Explosive, Class A Explosive, or Class B Explosive, as defined by DOT



Toxicity Characteristic (40 *CFR* 261.24)



- Based on a leachability test (TCLP)
- Waste is deemed hazardous if it exceeds threshold concentrations for specified constituents
- Test method 1311 published in EPA Publication SW-846; incorporated by reference [App. II to Part 261]

The underlying assumption of the toxicity characteristic (TC) is that the most likely disposal scenario for nonhazardous solid waste is a sanitary waste landfill. In such an environment, acidic leachate is generated from rainwater percolating through the decaying organic materials. Such leachate could mobilize toxic constituents from the solid waste.

The Toxicity Characteristic Leaching Procedure (TCLP) attempts to model that scenario by exposing waste samples to acidic extractant. If concentrations of hazardous constituents are found in the extractant and exceed the TC threshold, the waste is considered hazardous.

The TC thresholds are based on modeling the dilution/attenuation of the constituent as it migrates from the landfill to a downstream receptor well. Constituent concentrations at the receptor well must fall below the Maximum Contaminant Levels established under the Safe Drinking Water Act.

Toxicity Characteristic (continued)

- 40 constituents identified under toxicity characteristic
  - 8 metals
  - 7 pesticides/herbicides
  - 25 other organic compounds

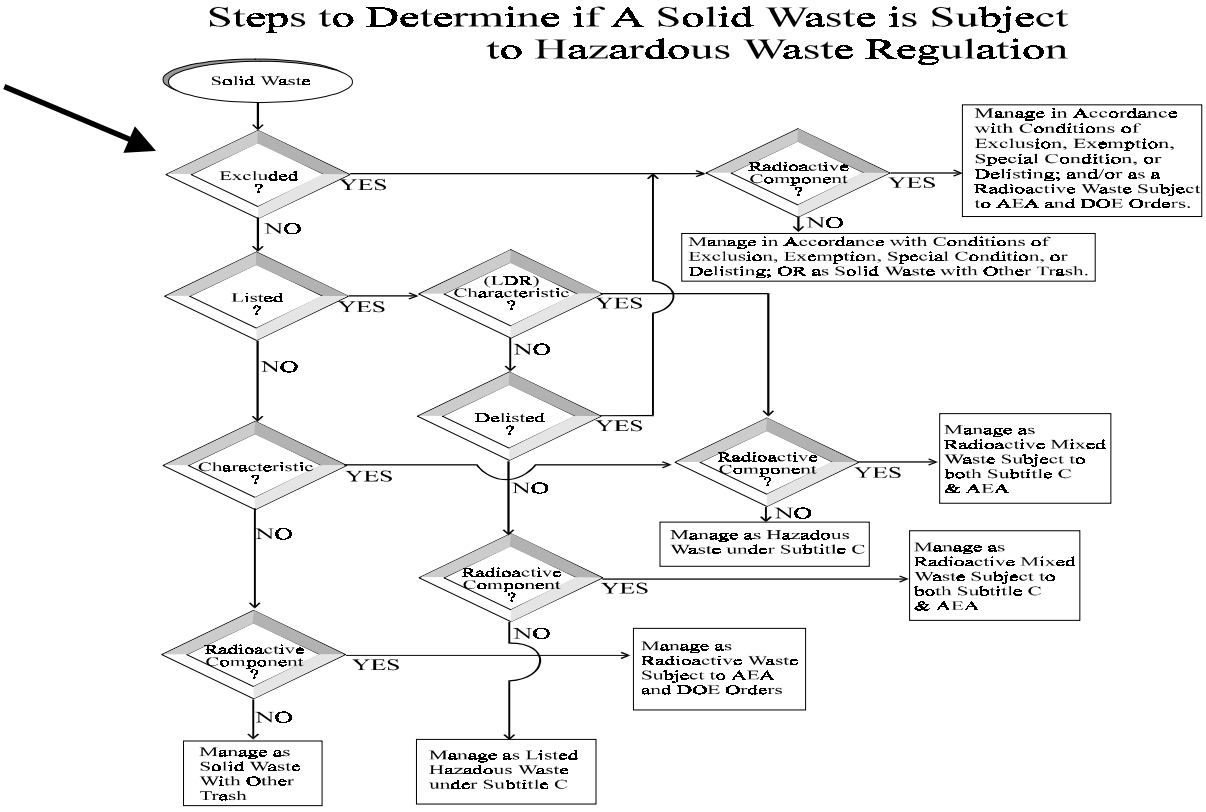
Maximum Concentration of Contaminants for the Toxicity Characteristic

EPA Code	Contaminant	Regulatory Level (mg/l)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP Silvex	1.0
D018	Benzene	0.5
D019	Carbon tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D031	Heptachlor	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D039	Tetrachloroethylene	0.7
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D043	Vinyl Chloride	0.2


Are we done yet?

Let's Revisit the FIRST Step for Defining Wastes as Hazardous:

- *Is the waste excluded?*
- Is the waste listed?
- Is the waste a characteristic hazard?



What should we consider during this Step?

Exclusions, Exemptions, and Special Conditions

- Conditionally exempt small quantity generators
- Materials that are NOT regulated
- Recyclable materials
- Universal wastes
- Residues in "empty" containers
- Delisting

Generators of less than 100 kg of hazardous waste in a calendar month are subject to special requirements set forth in 40 CFR 261.5. Briefly, these requirements include:

performing the generator's hazardous waste determination,

- complying with accumulation limits, and
- managing the wastes, either on-site or off-site, in an appropriate type of unit.

Provided these conditions are met, the generators qualify as conditionally exempt small quantity generators (CESQGs) and their wastes are not subject to Subtitle C regulation.

For the purpose of our discussion, the first decision diamond should be viewed as including, in addition to wastes that are conditionally exempt, a number of exclusions, exemptions, and special conditions. These exclusions, exemptions, and special conditions offer potential relief from Subtitle C requirements and include the categories listed above. Some of these categories (e.g., "Materials that are NOT regulated") consist of more than one exclusion, exemption, and/or special condition. These will be addressed individually on the following pages.

What are some of the materials that are NOT subject to hazardous waste regulations?

- Waste remaining in the unit in which it was generated
- Specific solid wastes not considered hazardous
- PCBs
- Sample/treatability exclusion
- "Mixture rule" exemptions
- "Derived-from" exemptions

Waste still in the unit in which it was generated - Material is not viewed as hazardous waste until it exits the unit. 40 *CFR* 261.4(c) There are two exceptions to this rule and they include:

- the unit is a surface impoundment, or
- the material remains in the unit more than 90 days after the unit ceases to operate.

Specific waste -- These wastes are regulated as solid wastes under RCRA, but are not considered hazardous waste under Subtitle C.

PCBs - These are generally regulated under the Toxic Substances Control Act (TSCA), but may be prohibited from land disposal (i.e., subject to LDR) if they are present as underlying hazardous constituents in a characteristic hazardous waste that is subject to LDR.

Samples - Samples of solid waste, water, soil, debris, or air (contained) that are collected for testing (analysis or treatability testing) are not subject to RCRA requirements.

"Mixture rule" exemptions -Some mixtures of small amounts of listed wastes and wastewaters are exempt from RCRA requirements.

"Derived from" exemptions - Some reclaimed materials, waste pickle liquor sludges, and wastes from burning recyclable materials are excluded from RCRA regulation.

Specific Solid Wastes NOT Considered Hazardous Waste

- Household waste
- Waste returned to the soil or used as fertilizer
- Mining overburden
- Waste from combustion of fossil fuels
- Wastes from exploration, development, or production of crude oil, natural gas, or geothermal energy
- Waste with trivalent chromium
- Waste from the extraction, beneficiation, and processing of ores and minerals

The specific wastes listed above and on the next page are solid wastes but not hazardous wastes. 40 CFR 261.4(b) Many of these wastes are generated and managed by specific industries in large volumes and the wastes have relatively low hazards, as compared to other hazardous wastes. Most of these wastes are typically recycled. Some of these wastes are generated and managed by DOE including waste from combustion of fossil fuels, wastes from fossil fuel development and production, and chlorofluorocarbons.

Specific Solid Wastes NOT Considered Hazardous Waste (Continued)

- Cement kiln dust
- Discarded arsenical-treated wood or wood products
- Petroleum-contaminated media/debris subject to UST corrective action
- Reinjected groundwater
- Used chlorofluorocarbon refrigerant from totally enclosed heat transfer equipment
- Non-terne plated , hot drained, used oil filters
- Used oil re-refining distillation bottoms used as a feedstock

Although not listed above, **PCB-containing** dielectric fluid and electric equipment containing such fluid are exempt from Subtitle C regulation provided they are hazardous only because they exhibit the characteristic of toxicity for one or more organic constituents. 40 *CFR* 261.8

Sample/Treatability Exclusion

- The sample/treatability exclusions apply to waste that will be analyzed or treated and include:
  - Solid waste, water, soil, or air collected for testing to determine its characteristics or composition
  - Samples collected for treatability studies
  - Samples undergoing treatability studies

The sample exclusion (40 *CFR* 261.4(d)) was crafted to allow generators to send their waste to an off-site laboratory to determine its characteristics or composition.

Treatability studies are studies in which a hazardous waste is subjected to a treatment process to determine:

- whether the waste is amenable to the treatment process
- if pretreatment is required
- optimal process conditions
- the efficiency of the treatment process
- the characteristics and volume of residuals

The exclusion applies to the collection, preparation, storage, and transportation of the sample. When the sample is no longer needed for testing or analysis, it again becomes subject to regulation. The quantity limits for the generators and the laboratory or testing facility are:

10,000 kg non-acute hazardous waste (total)

- 1,000 kg non-acute hazardous waste (non-media/debris)
- 1 kg acute hazardous waste (non-media/debris)
- 10,000 kg contaminated media or debris contaminated with hazardous waste, including 2,500 kg contaminated with acute hazardous waste.
- (40 *CFR* 261.4(e))

Laboratories and testing facilities likewise are not subject to RCRA requirements (e.g., obtaining a hazardous waste storage permit) provided certain notification and reporting requirements, storage, and quantity limitations are achieved. (40 *CFR* 261.4(f))

Mixture Rule Exemptions
(40 *CFR* 261.3(a)(2)(iv))

- **Wastewater discharges regulated under the CWA are not subject to Subtitle C provided:**
  - **Spent solvent concentrations do not exceed 1 ppm or 25 ppm depending on the type of listed solvent**
  - **Heat exchanger bundle cleaning sludge from petroleum refining industry (K050)**
  - **De minimis losses of commercial chemical products or chemical intermediates**
  - **Wastewaters from laboratory operations containing toxic wastes**

Industrial processes often result in mixtures of small amounts of listed wastes with large amounts of wastewaters resulting in low concentrations of toxicants.

The wastewater exemption applies to mixtures managed in wastewater treatment systems the discharge of which is regulated under the Clean Water Act (CWA).

Exemptions are provided for:

- solvents at concentrations that do not exceed:
  - 1 ppm for carcinogenic solvents (i.e., carbon tetrachloride, tetrachloroethylene, trichloroethylene)
  - 25 ppm for toxic solvents (e.g., methylene chloride, cresols, toluene)
- heat exchanger bundle cleaning sludge from the petroleum refining industry (K050)
- *de minimis* losses of commercial chemical products or chemical intermediates
- wastewaters from laboratory operations containing toxic wastes provided the laboratory's flow does not exceed 1 percent of the facility's total flow, or the concentration does not exceed 1 ppm in the headworks

Derived-from Rule Exemption
(40 *CFR* 261.3(c)(2)(ii))

- Materials that are reclaimed from solid wastes and used beneficially
- Waste pickle liquor sludge
- Wastes from burning certain recyclable materials that are exempted from regulation
- Certain nonwastewater residues resulting from high temperature metals recovery (HTMR)
- Wastes that do not exhibit a hazardous waste characteristic

Certain solid wastes are not hazardous even though they are generated from the treatment, storage, or disposal of a listed hazardous waste, provided they do not exhibit one or more of the characteristics of hazardous waste. These exempt wastes include:

Materials that are reclaimed from hazardous wastes and used beneficially. These are considered products, not wastes. Examples are:

- recovered solvents, and
- reclaimed metals.

The exemption does not apply to reclaimed materials that are used in a manner constituting disposal or are burned for energy recovery, unless that is the recovered material's normal manner of use.

Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry.

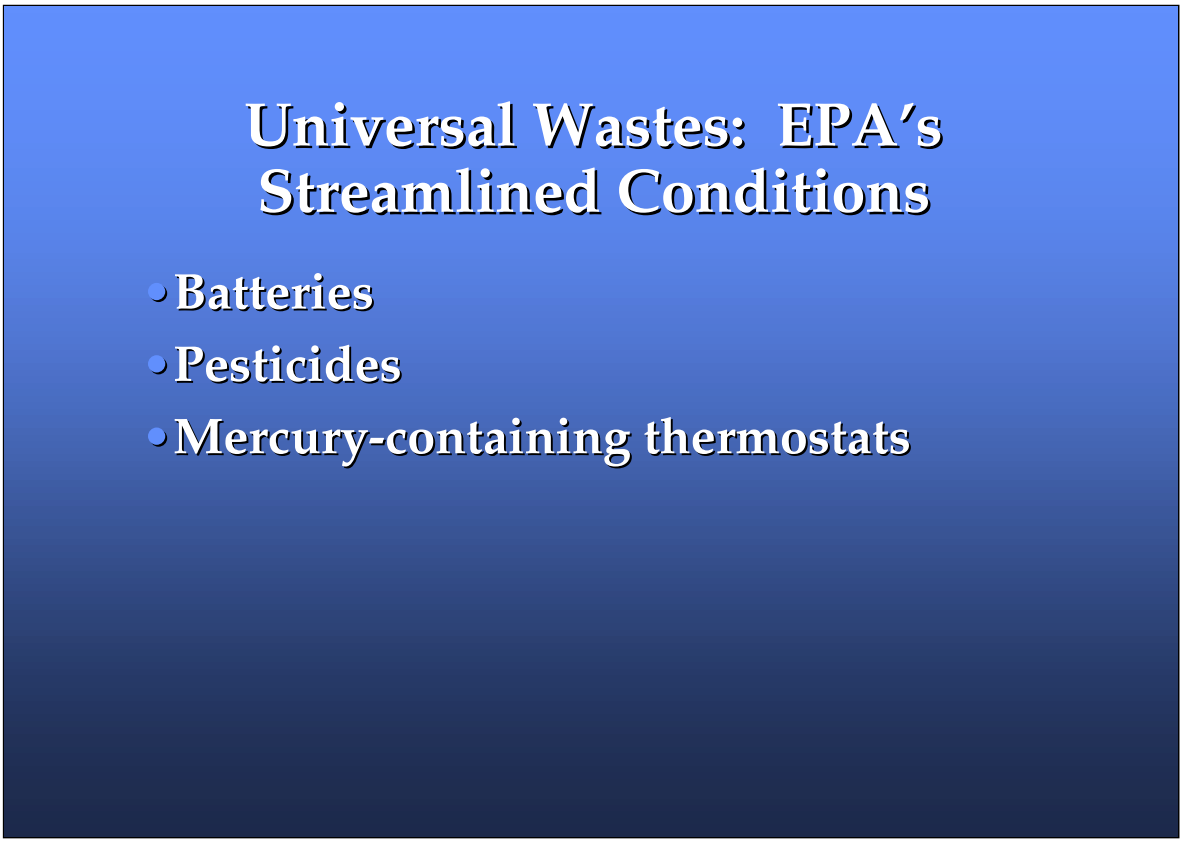
- Wastes from burning certain fuels produced from oil-bearing hazardous wastes from petroleum refining, production, or transportation, which are themselves exempt from regulation
- Nonwastewater residues (e.g., slag) from HTMR processing of K061, K062, or F006 waste in specified units.
- Hazardous debris or debris that has been treated using a specified technology and does not exhibit a characteristic

Requirements for Hazardous Wastes That Are Recycled (i.e., Recyclable Materials)

- Recyclable materials subject to 40 *CFR* Part 266
  - Materials used in a manner constituting disposal
  - Hazardous waste burned for energy recovery
  - Used oil burned for energy recovery (*OR* 40 *CFR* 279)
  - Materials from which precious metals are reclaimed
  - Spent lead-acid batteries being reclaimed
- Recyclable materials exempt from regulation
  - Industrial ethyl alcohol being reclaimed
  - Used batteries returned to a battery manufacturer for regeneration
  - Scrap metal
  - Materials (fuels, reclaimed oil, or hazardous waste fuel) associated with petroleum refining production, or transportation
  - Used oil that is recycled and is also hazardous solely because it exhibits a hazardous characteristic (*OR* 40 *CFR* 279)

Hazardous wastes that are recycled are defined as recyclable materials. Recyclable materials that are hazardous wastes are subject to generator, transporter, and storage requirements unless otherwise specified under 40 CFR 261.6. Some of them are regulated under 40 CFR Part 266. In addition, some recyclable materials are exempt from regulation.

Dependent on State-specific regulations, used oil that is hazardous waste solely because it exhibits a hazardous characteristic is exempt from regulation when recycled in some manner other than burning for energy recovery. This is not the case at the Federal level. Specifically, although used oil is exempt from hazardous waste regulations, management standards specified under 40 CFR Part 279 apply. The prescribed standards apply to generators, transporters, collectors, and processors of used oil. The requirements include notification, tracking of used oil, and general facility standards.



As part of its commitment to reinvent environmental regulations, EPA published a final rule addressing universal wastes in the May 11, 1995. (60 FR 25492) The rule addresses certain widely generated wastes and is designed to reduce the amount of administrative requirements that otherwise apply, thereby encouraging environmentally-sound collection and recycling programs. Reduced requirements include exemptions from manifesting, permitting/interim status for a limited number of EPA-specified management activities, and specified elements under the land disposal restriction (LDR) program. Reduced requirements are set forth in a new part 273 of the 40 CFR.

When determining whether wastes are eligible for the reduced requirements, generators performing their hazardous waste determination should ascertain whether the material meets one of the material-specific definitions below:

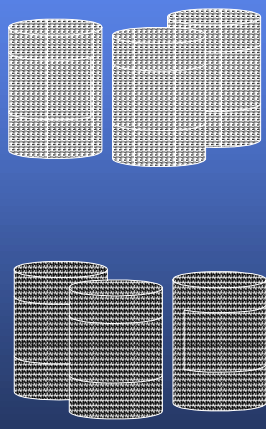
Battery - encompasses all battery types and sizes and means a device consisting of one or more electrically connected cells (anode, cathode, and electrolyte as well as necessary connections) which is designed to receive, store, and deliver electricity. This definition includes batteries from which electrolyte has been removed.

Pesticide is any substance intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant.

Thermostat means a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from temperature control devices.

When deciding whether a particular material should be managed under the simplified provisions, generators must ensure that the Universal Waste Rule has been adopted by both their State and the recipient's State.

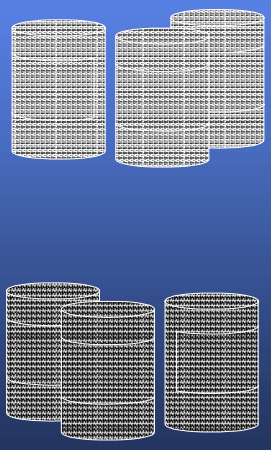
Are Containers that Held Hazardous Waste Also Hazardous?



- Empty containers are not hazardous (40 *CFR* 261.7)
- Containers are empty (except those that held acute hazardous waste) if:
  - emptied by conventional methods AND
  - no more than 2.5 cm of residue,
  - 3% by weight if less than or equal to 110 gal in size, or
  - 0.3% weight (total capacity) if greater than 110 gal.

EPA has issued some interesting policy letters regarding empty containers. First, an empty container is one that has been emptied by all conventional means, not just one. Second, empty containers that contained ignitable wastes and produce a sufficient quantity of vapor to have a flash point <140°F are hazardous wastes. Thus, under RCRA, even determining when a container is empty may be subject to interpretation.

Are Containers Hazardous (Continued)



- **Containers that held acute hazardous waste are empty if:**
  - **they have been triple rinsed with an appropriate solvent**
  - **they have been cleaned by an alternative method demonstrated in the scientific literature**
  - **the container liner that prevented contact between the product and the container has been removed**

Because acute hazardous wastes pose a greater risk to human health and the environment than non-acute hazardous waste, the criteria for emptying containers that held acute hazardous wastes are more stringent. Inner liners and rinsate generated while emptying such containers typically will be defined as acute hazardous waste. Once defined as empty in accordance with the governing criteria, containers are no longer regulated under Subtitle C and may be re-used or disposed.

What is delisting?

- Delisting is a regulatory process (40 *CFR* 260.22) that applies to listed wastes
- It requires petitioning the appropriate EPA Regional Office or authorized State
- Petitioners must demonstrate that:
  - the waste produced by a particular facility does not meet the criteria for its waste category
  - no other constituents are present that might cause the waste to exhibit a characteristic and, therefore, require that the waste be regulated as hazardous waste

Delisting is one way out of the hazardous waste arena. It is, however, not a simple path. It is a regulatory process requiring public comment and resulting in a modification of the CFR. The process requires approximately 2 years. Appendix IX, 40 CFR 261, contains a list of wastes that have been excluded from regulation as a result of the delisting process.

The delisting is waste- and site-specific; therefore, one facility's delisting petition does not allow another facility to claim an exclusion from regulation. For example, on February 1, 1995, EPA proposed to grant a petition submitted by DOE to exclude from listing as hazardous wastes certain effluent wastes to be generated by a treatment process at its Hanford facility. (60 FR 6054) If the final exclusion is granted, DOE will be required to conduct verification testing and retreat effluents when they exhibit total constituent levels above a specified level.

In the past, all delisting petitions were to be submitted to EPA Headquarters. On October 10, 1995, however, the EPA Administrator formally delegated hazardous waste delisting authority to EPA's ten Regional Offices. States authorized to administer a delisting program in lieu of the federal program also may exclude waste from hazardous waste regulation.

Changing Definition of Hazardous Waste

- Additional listings
- Additional criteria
- New or revised exclusions
- Hazardous Waste Identification Rule (HWIR)

The definition of hazardous waste changes over time as the RCRA statute is amended and EPA promulgates new regulations. In some cases, the changes are minor, such as when new listings or exclusions are added. In other cases, there may be major changes to the definition.

EPA's changes to the toxicity characteristic had a major impact on DOE's waste management program. In the future, EPA is expected to finalize two proposed Hazardous Waste Identification Rules (HWIR) -- HWIR-waste and HWIR-media. These rules will correct some of the current inequities in the hazardous waste definition.

Definition of Hazardous Waste in Summary

- The definition of hazardous waste begins with the solid waste definition.
- EPA has established a hierarchy for performing the hazardous waste determination which includes:
  - Determining if the waste is excluded;
  - Determining whether the waste meets a listing
  - Determining whether the waste exhibits a characteristic
- Listed waste include the F-, K-, P- and U-listed waste
- D-series hazardous wastes are those exhibiting any of four characteristics (i.e., ignitability, corrosivity, reactivity, or toxicity).
- Mixed waste is the smallest subset of the universe of materials.