Hazardous Waste Determination



The Cornerstone of Hazardous Waste Management

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Hazardous Waste Determination Procedure

- 1. Is it a **waste**?
- 2. Is it **<u>exempt</u>** from the rules?
- 3. Is it a **listed** waste?
- 4. Is it a **characteristic** waste?
- 5. Is it a hazardous waste mixture?



Hazardous Waste- What is it?

Waste

Anything that is **SPENT**, **DISCARDED** or **ABANDONED**

Hazardous

Potential Threat to Human Health or the Environment

A material must first be a waste before it can be classified a hazardous waste

Waste



Spent-

A material that has been used and can no longer be used for it's intended purpose without being processed (*filtered, reconstituted, cleaned, etc...*).

Waste

Discarded-



Anything that is abandoned, recycled, disposed of, burned, or incinerated – you make a decision



Waste

Abandoned - Anything that is disposed of, burned or

incinerated; OR

Anything that is accumulated, stored or treated (but not recycled) before being disposed of, burned, or incinerated.



Abandoned



Exemptions Not Regulated as Hazardous Waste

 Certain specific wastes are not regulated for various reasons



Examples:

Wastewater discharges regulated by other programs Medicinal nitroglycerine Scrap metal Used CFC refrigerants (if refrigerant is reclaimed) Empty Containers

Waste Numbers ("codes")

All hazardous wastes are identified by either an EPA or state waste code:

EPA Waste Codes P, U, F, K, or D followed by 3 numbers "D001", "F003", K051 etc...

Waste Codes

Why? - Allow wastes and hazards to be easily identified

Waste codes provide instructions to Treatment, Storage & Disposal Facilities (TSDFs) regarding how to properly treat, deactivate or destroy the waste and its associated hazard.

T	TREATMENT STANDAR	IDS FOR HAZARDOUS WASTES	NOTE: NA means no	# applicable	
	ASTE WASTE DESCRIPTION AND TREATMENT/REGULATORY SUBCATEGORY	Common Name	CAS ² Number	WASTEWATERS Concentration in mg/L ² ; or Technology Code ⁴	NONWASTEWATI Concentration in mp unless noted as "m TCLP"; or Tochno Code ⁴
100	01 * Jaminable Characteristic Wastes, except for the §261.21(a)(1) High TOC Subcategory.	NA	NA	DEACT and meet §268.48 standards ⁴ ; or ROROS; or CMBST	DEACT and most § standards ⁴ , or ROR CMBST
	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than or equal to 10% total organic carbon. (Note: This subcategory consists of neowastewater only.)	NA	NA	NA	RORGS; CMBS POLYM
D002 *	Corrosive Characteristic Wastes.	NA	NA	DEACT and meet §268.48 standards*	DEACT and most §26
D002, D004, D005, D006, D007, D008, D009, D010, D011	Radioactive high level water generated during the reprocessing of leaf role. These The subcategory consists of nonwatewaters only (Corrosivity (pH)	NA	NA	HIVIT
		Arsenic	7440-38-2	NA	10.00
		Barium	7440-39-3	NA	HLVIT
		Cadmium	746.00	NA	HLVIT
		Chromium (Tor-D	7640-43-9	NA	HLVIT
		Land	7440-47-3	NA	HLVIT
		LCau	7439-92-1	NA	HLVIT
		Mercury	7439-97-6	NA	HLVIT
		Selenium	7782-49-2	NA	HLVIT
D001*	Reserves Sulfides Subestances based on 241 234-145	Silver	7440-22-4	NA	HLVIT
0003	Explosives Subcategory based on 261 23(aX6). (7), and (8)	NA	NA	DEACT	DEACT
_		1	1 1	and meet §268.48	and most §268.48 standards*
F	TREATMENT STANDARDS	FOR HAZARDOUS WASTES	NOTE: NA means not a CONSTITUENT	and meet \$268.48 standberds*	NONWASTEWATER
WASTE	TREATMENT STANDARDS	FOR HAZARDOUS WASTES T REGULATED HAZARDOUS Common Name	NOTE: NA means not a CONSTITUENT CAS ² Number	end more E268.48 pplicable WASTEWATERS Concentration in mg/L, or Technology Code'	NONWASTEWATEJ Concentration in mg/l unless noted as "mg
WASTE	TREATMENT STANDARDS WASTE DESCRIPTION AND TREATMENT/REGULATORY SUBCATEGORY ¹ Unexploded ordnance and other explosive devices which have been the subject of an emergency response.	FOR HAZARDOUS WASTES 1 REGULATED HAZARDOUS Common Name NA	NOTE: NA means not a CONSTITUENT CAS ¹ Number NA	end more fisher AF pplicable WASTEWATERS Concentration in mg/L ¹ , or Technology Code ⁴ DEACT	NONWASTEWATER Concentration in mg/ TCLP*; or Technole Code ⁴ DEACT
WASTE	TREATMENT STANDARDS WASTE DESCRIPTION AND TREATMENT/REGULATORY SUBCATEGORY ¹ Unexploted orbinance and other explosive devices which have been the subject of an emergency repose. Other Reactives Subcategory based on 261.23(s)(1).	POR HAZARDOUS WASTES 1 REGULATED HAZARDOUS Common Name NA NA	NOTE: NA means not a CONSTITUENT CAS ² Number NA NA	pplicable WASTEWATERS Concentration in mg/L ¹ , or Technology Code ⁴ DEACT DEACT DEACT and mer; \$268,48 standards ⁴	NONWASTEWATEB Coccentration in mg/s unless noted as "mg TCLP: or Technolo Code DEACT DEACT and meet §284. standardd
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Hazardous Waste Definition

There are two ways we can identify a hazardous waste: 1. The waste is <u>specifically listed</u> as hazardous 2. The waste has a <u>characteristic</u> property **Listed Wastes F**001-**F**039 **P**001-**P**205 **U**001-**U**411 **K**001-**K**178 **Characteristic Wastes**

<u>**D**</u>001-<u>**D**</u>043

Listed Hazardous Wastes

We can categorize the waste lists even further:

- 1. Unused Discarded/Abandoned Products
 - P-list
 - U-list
- 2. Certain wastes <u>Used</u> in processes
 - K-list
 - F-list

UNUSED LISTED WASTES

Discarded or Abandoned Commercial Chemical Products

"P" waste codes= Acutely hazardous waste
"U" waste codes= Toxic hazardous wastes

Either the chemical is specifically listed (named) or the **Sole Active Ingredient** of the product is specifically listed.

Sole Active Ingredient

- The ONE chemical in the product that makes it do what it's supposed to
 - You have to figure out what each chemical in the product does
 - If two or more chemicals do the same thing, it's not a sole active ingredient
 - Even if they're both on the list
 - If there is one chemical that makes it do what it's supposed to, and it's not on the P or U-list, then the entire waste is not on the P or U-list

To be a "P" or "U" – listed waste

- 1. It must be unused
- 2. It must have a "sole active ingredient"; and
- 3. The sole active ingredient must be on the "P" or the "U" list

Are these "P" or "U" –listed?

- Pure <u>acetone</u> getting thrown out
- A product blend of <u>acetone</u> (solvent), <u>xylene</u> (solvent), and <u>orange scent</u> getting thrown out
- A blend of <u>acetone</u> solvent and <u>blue dye #2</u> colorant getting thrown out
- Pure <u>1,3,7-trimethylxanthine</u> getting thrown out



P & U Listed Waste



USED LISTED WASTES

"F" waste codes – Non-Specific Source Wastes

- 3 broad categories
 - •Spent Solvents
 - •Electroplating/Chemical Metal-working

•Chemical Manufacture

"K" waste codes - Specific Source Wastes

Wastes from one of 18 specific industries

Wood preservation, Organic chemicals,

Pesticides, Explosives, Ink formulation, etc.

F-Listed Waste



F-Listed Waste





K-Listed Waste



With LISTED wastes...

The concentration of the bad stuff in the waste doesn't matter



Characteristic Wastes

- Exhibit a hazardous waste property
 - Ignitable- D001
 - Corrosive D002
 - Reactive D003
 - Toxic **D004-D043**
- <u>I Can Remember That!</u>

Ignitable

- Waste code = "D001"
- <u>Liquid</u> with Flash Point < 140 deg. F
- <u>Solid</u> capable of causing fire through friction and when ignited burns vigorously and persistently (e.g. Nitrocellulose or some metal fines)
- "Flammable gas" (USDOT)
 (e.g. Propane)
- "Oxidizer" (USDOT)

(e.g., Hydrogen Peroxide or Pool Chemicals) 24

Ignitable



Corrosive

- Waste Code = "D002"
- Aqueous (water based) with a pH < 2 or > 12.5
- Liquid and corrodes steel at greater than 0.25"/year

• NH02

Corrosive Solid



Reactive

- Waste Code = "D003"
- Normally unstable
- Reacts violently with water/air



- Forms potentially explosive mixtures with water/air
- Toxic vapors in contact with water/air
- Cyanide or sulfide bearing waste
- Capable of detonation or explosive reaction
- It is a DOT "Forbidden" Explosive (49 CFR)

Reactive

http://www.cameochemicals.noaa.gov/



Toxic

- Waste codes = "D004" "D043"
- Table 4.9 Requires a lab test called the "Toxicity" Characteristic Leaching Procedure" ("TCLP")
- Simulates leaching activity of landfills
- 8 metals, 6 pesticides, 25 organics



Must be above a minimum concentration to be a toxicity characteristic waste

Toxicity Characteristic

1.Is there any possibility that a chemical in 40 CFR 261.24 Table1is in your waste?

- 1. What is in the products you use?
- 2. What things might be contaminants in your process?
- 3. How about trace wear metals in the equipment you use?
- 2.If there is a possibility that a chemical in Table1is in your waste, what is its concentration?

Hazardous Waste Mixtures

- "Waste" or "material" <u>mixed with</u>:
 - A Listed waste (P, U, F, K) is a hazardous waste
 - A Characteristic waste, and the mixture still exhibits the characteristic is a hazardous waste

Also,

Spill residues, soil, water, debris that are mixed with listed wastes

Hazardous Waste Determination

• Responsibility of the Generator!

Once it is a waste you must decide if it is a hazardous waste



How do I know if my waste is hazardous?

GENERATOR KNOWLEDGE

Some Generator Knowledge of materials and processes is inherent

- Water doesn't burn
- Granite isn't reactive
- Stirring paint doesn't make it more toxic
- Pouring something doesn't make it more corrosive

Some generator knowledge is researched

Gather existing information that enables you to increase generator knowledge

Process Knowledge What happens to the materials I use? Material Composition – What's IN this stuff? MSDS labels profiles manufacturer information, product specs. previous analyses...

Some generator knowledge has to be acquired through Testing

What you are testing is called a representative sample

There are specific tests to determine if:

- 1. Your liquid waste is ignitable
- 2. Your waste is corrosive
- 3. Your waste has a toxicity characteristic (D004-D043)

There are additional tests to help build or confirm your generator knowledge

Testing - lab analysis ("SW-846")

Documentation

You must do a waste determination on all of your industrial waste streams

You must maintain documents that indicate how you arrived at your conclusion

These documents may include: Waste profiles Characterization documents MSDSs Test Results



You will be asked for waste determination documentation during a hazardous waste inspection Take credit for your hard work, write it down! ³⁸

Don't Let Your Waste Determination Get To This

