

Hazardous Waste Determinations

The Cornerstone of Hazardous Waste Management



Hazardous Waste Determination Procedure

1. Is it a waste?
2. Is it exempt 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

Everything you think is a waste, plus:

Things that are recycled

Things that aren't handled like they have value

Hazardous

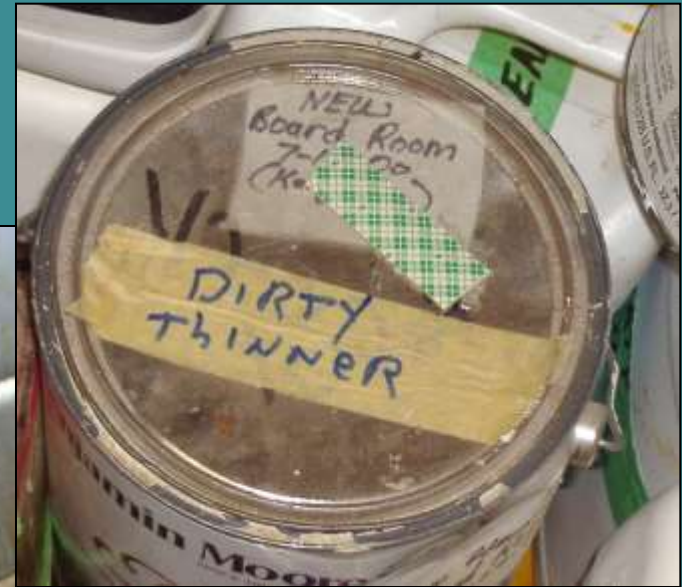
Potential Threat to Human Health or the Environment

Hazardous “Wastes” are not the same as

Hazardous “Materials”

USED Wastes

- Some wastes are used, or “spent”



UNUSED Wastes

- Some wastes are unused
 - Discarded or abandoned



Unused Wastes

1. You make a deliberate decision that you won't use it any more, or
2. You manage it like it has no value



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”, etc...

NH Waste Codes

NH followed by 2 numbers
“NH01”, “NH02”, “NH03”

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.

TREATMENT STANDARDS FOR HAZARDOUS WASTES (TSDFs) (40 CFR 268.49)

WASTE CODE	WASTE DESCRIPTION AND TREATMENT/REGULATORY SUBCATEGORY*	REGULATED HAZARDOUS CONSTITUENTS		WASTEWATER	NONWASTEWATER
		Constituent Name	CERCLA Number	Concentration in mg/L or Technology Code ^b	Concentration in mg/L or Technology Code ^b
D001	Ignitable (Flammable) Liquids (except for the D001 (D001) High TSS Subcategory)	Acetone	101	REACT and meet [200-40 standard] ^c or [200-10, or 200-15]	REACT and meet [200-40 standard] ^c or [200-10, or 200-15]
		High TSS (except for Ignitable (Flammable) Liquids (except for the D001 (D001) High TSS Subcategory))	NA	NA	REACT and meet [200-40 standard] ^c or [200-10, or 200-15]
D002	Corrosive (Inorganic) Wastes	NA	NA	REACT and meet [200-40 standard] ^c	REACT and meet [200-40 standard] ^c
D003	Explosive high level wastes generated during the processing of fuel rods (Note: This subcategory consists of nonwastewater only.)	Chromium (VI)	103	NA	REACT
		Arsenic	7440-39-2	NA	REACT
		Barium	7440-39-2	NA	REACT
		Cadmium	7440-43-8	NA	REACT
		Chromium (Total)	7440-47-3	NA	REACT
		Cobalt	7440-48-4	NA	REACT
		Mercury	7440-59-3	NA	REACT
		Nickel	7440-02-4	NA	REACT
D004	Reactive Solvents Subcategory (based on D01 (D004))	NA	NA	REACT	REACT
D005	Flammable Solvents Subcategory (based on D01 (D005))	NA	NA	REACT	REACT

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		Constituent Name	CERCLA Number	Concentration in mg/L or Technology Code ^b	Concentration in mg/L or Technology Code ^b
D006	Unstabilized residues and other ignitable residues which have been the subject of an emergency response	Acetone	101	REACT	REACT
		Other Ignitable Subcategory (based on D01 (D006))	NA	REACT and meet [200-40 standard] ^c	REACT and meet [200-40 standard] ^c
D007	Water Reactive Subcategory (based on D01 (D007)) (1) and (2) (Note: This subcategory consists of nonwastewater only.)	NA	NA	NA	REACT and meet [200-40 standard] ^c
		Reactive Oxidites Subcategory (based on D01 (D007))	Cyanide (Total) ^d	25.02.0	Reactive
D008	Wastes that exhibit, or are expected to exhibit, the characteristics of toxicity for metals based on the toxicity characteristic leaching procedure (TCLP) in SW846	Cyanide (Acetate) ^d	77-02-0	RE	RE
		Arsenic	7440-39-2	1.4 and meet [200-40 standard] ^c	1.0 mg/L TCLP and meet [200-40 standard] ^c
D009	Wastes that exhibit, or are expected to exhibit, the characteristics of toxicity for metals based on the toxicity characteristic leaching procedure (TCLP) in SW846	Barium	7440-39-2	1.2 and meet [200-40 standard] ^c	0.1 mg/L TCLP and meet [200-40 standard] ^c
D010	Wastes that exhibit, or are expected to exhibit, the characteristics of toxicity for cadmium based on the toxicity characteristic leaching procedure (TCLP) in SW846	Cadmium	7440-43-8	0.05 and meet [200-40 standard] ^c	0.11 mg/L TCLP and meet [200-40 standard] ^c
		Cadmium (Including Barium Subcategory) (Note: This subcategory consists of nonwastewater only.)	NA	NA	REACT
D011	Wastes that exhibit, or are expected to exhibit, the characteristics of toxicity for chromium based on the toxicity characteristic leaching procedure (TCLP) in SW846	Chromium (Total)	7440-47-3	2.0 and meet [200-40 standard] ^c	0.05 mg/L TCLP and meet [200-40 standard] ^c

Hazardous Waste Definition

Wastes can be hazardous because they are identified on one of four specific lists or because they have a hazardous characteristic

Listed Wastes

P, U, K, F waste codes

Characteristic Wastes

D001-D043

Listed Hazardous Wastes

We can break down the waste lists even further:

1. Unused Discarded/Abandoned Products

- P-list
- U-list

2. Certain wastes Used in processes

- K-list
- F-list

UNUSED LISTED WASTES

Unused Discarded or Abandoned Chemical “Products”

“P” waste codes= Acutely hazardous waste

“U” waste codes= Toxic hazardous wastes

Either the pure 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
 - Figure out what each ingredient 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 P or U-listed

To be a “P” or “U” – listed waste

1. The waste 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 unused acetone getting thrown out
- A product blend of unused acetone (solvent), xylene (solvent), and orange scent getting thrown out
- A blend of unused acetone solvent and blue dye #2 colorant getting thrown out
- Pure unused 1,3,7-trimethylxanthine getting thrown out



P & U Listed Waste



USED LISTED WASTES

“F” List– Non-Specific Source Wastes

3 broad categories

- Spent Solvents
- Electroplating/Chemical Metal-working
- Chemical Manufacture

“K” List- Specific Source Wastes

Wastes from one of 17 specific industries

Wood preservation, Making organic chemicals,
Iron & Steel, Ink Formulation, etc.

F-Listed Waste



Plating sludge

K-Listed Waste

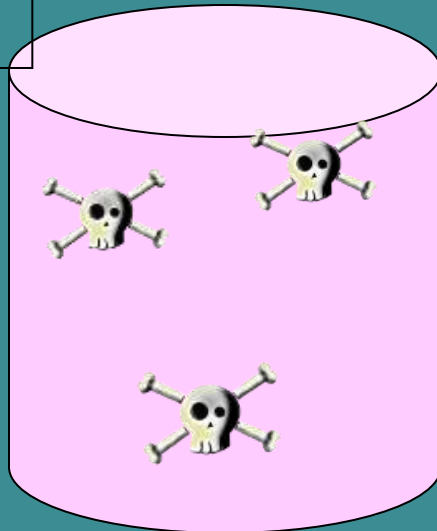


Iron & Steel Industry

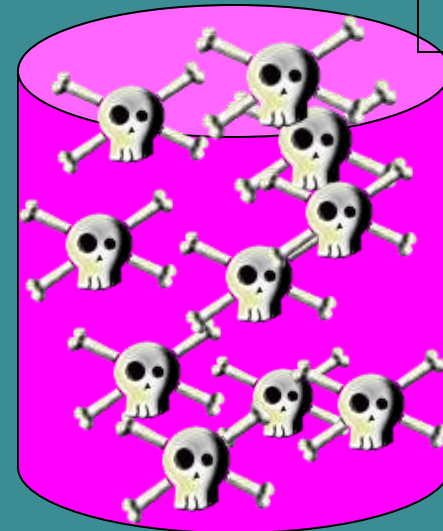
With Most LISTED wastes...

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

P081



P081



Characteristic Wastes

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

Ignitable

- Waste code = “D001”
- Liquid with Flash Point less than ($<$) 140 deg. F
- Solid capable of causing fire through friction and when ignited burns vigorously and persistently (e.g. metal fines)
- “Flammable gas” (USDOT)
(e.g. Propane)
- “Oxidizer” (USDOT)
(e.g., Hydrogen Peroxide or Pool Chemicals)

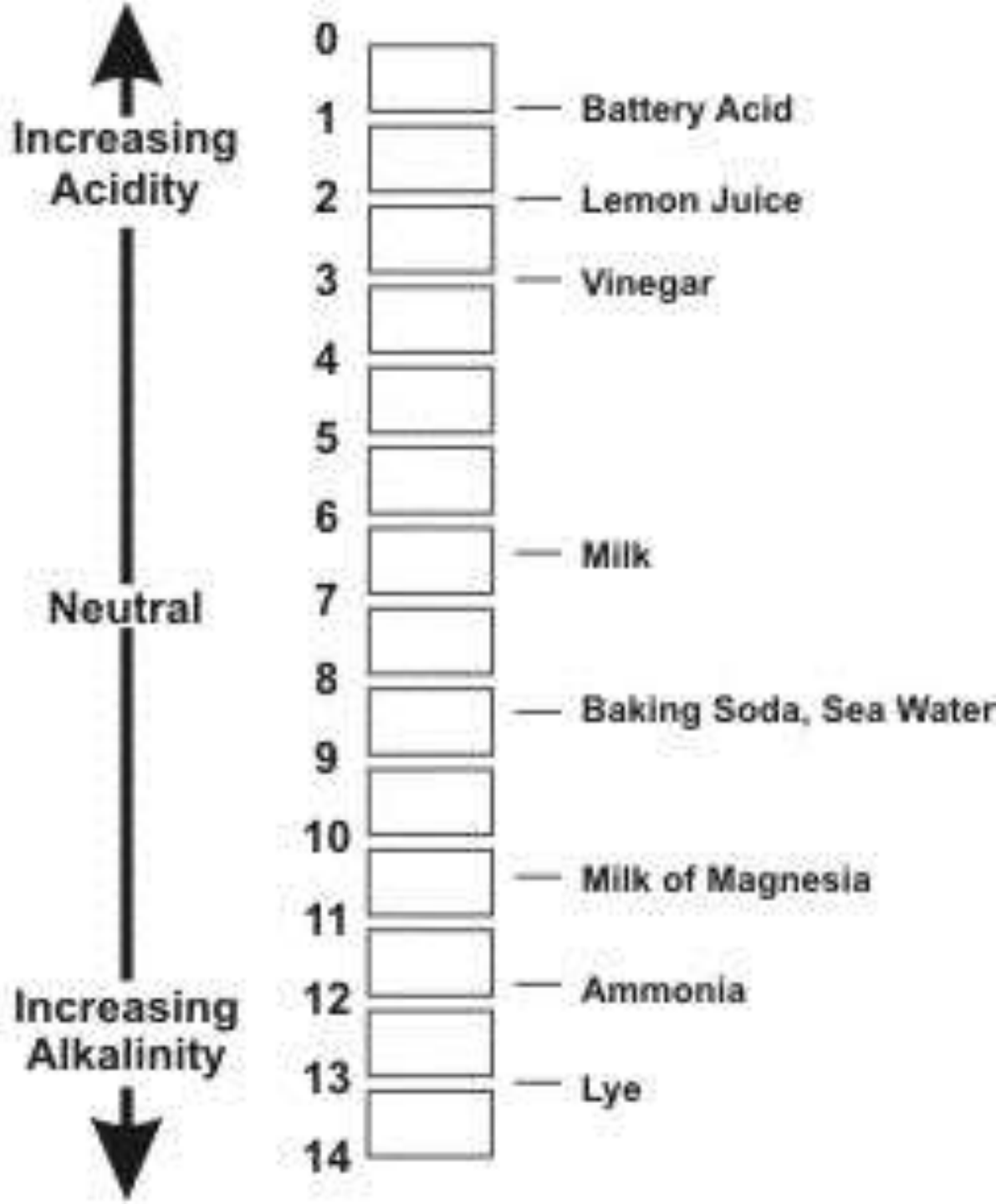
Ignitable



Corrosive

- Waste Code = “D002”
 - Water-based liquid with a
pH ≤ 2 or ≥ 12.5
 - Liquid and corrodes steel at greater than 0.25”/year
-
- **NH02**
 - Corrosive Solid

Corrosive

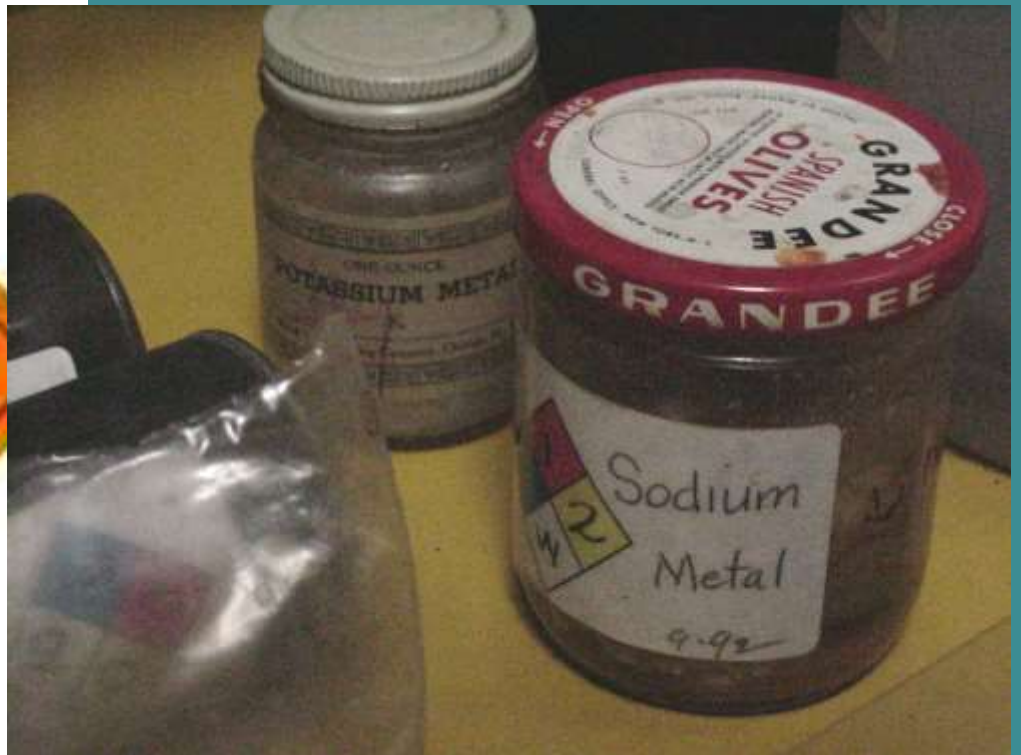


Reactive

- 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 waste
- Capable of detonation or explosive reaction
- It is a DOT “Forbidden” Explosive (49 CFR)



Reactive



Toxic

Table 4.9

- Waste codes = “D004” – “D043”
- Requires a lab test called the “Toxicity Characteristic Leaching Procedure” (“TCLP”)
- Simulates leaching activity of landfills



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

Toxicity Characteristic

1. Is there any possibility that a chemical in Table 4.9 is 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 Table 4.9 is in your waste, what is its concentration?

Hazardous Waste Mixtures

- “Waste” or “material” mixed with:
 - **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

Usually,

- Spill residues, soil, water, debris or absorbents that are mixed with **wastes** after they are created

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

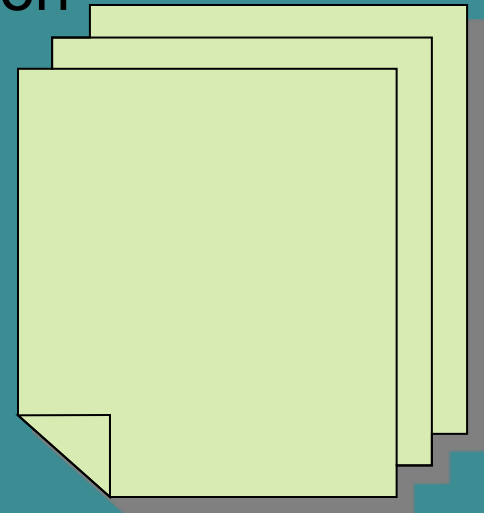
These documents may include:

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!**