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 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

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.
Hazardous Waste Definition

There are two ways we can identify a hazardous waste:
1. The waste is specifically listed as hazardous
2. The waste has a characteristic property

Listed Wastes

- P001-P205
- U001-U411
- F001-F039
- K001-K178

Characteristic Wastes

- D001-D043
Listed Hazardous Wastes

We can categorize 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

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 acetone getting thrown out

• A product blend of acetone (solvent), xylene (solvent), and orange scent getting thrown out

• A blend of acetone solvent and blue dye #2 colorant getting thrown out

• Pure 1,3,7-trimethylxanthine 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

Plating sludge
F-Listed Waste
K-Listed Waste

Iron & Steel Industry
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

• I Can Remember That!
Ignitable

• Waste code = “D001”
• Liquid with Flash Point < 140 deg. F
• Solid 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)
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”
- 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 Table 1 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 1 is in your waste, what is its concentration?
Hazardous Waste Mixtures

• “Waste” or “material” \textbf{mixed with}:
  – \textbf{A Listed} waste (P, U, F, K) is a hazardous waste
  – \textbf{A Characteristic} waste, \textbf{and} the mixture still exhibits the characteristic is a hazardous waste
Also,
  – Spill residues, soil, water, debris that are \textbf{mixed with} \textbf{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!
Don’t Let Your Waste Determination Get To This