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.
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
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 $\leq 2$ or $\geq 12.5$

• Liquid and corrodes steel at greater than 0.25”/year

• NH02

• Corrosive Solid
Corrosive

- Battery Acid
- Lemon Juice
- Vinegar
- Milk
- Baking Soda, Sea Water
- Milk of Magnesia
- Ammonia
- Lye
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

• 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
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!