Waste Characterization & Generator Status
What You Need to Know

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Ohio EPA
Compliance Assistance and Pollution Prevention

September 25, 2013
What We Will Cover

• Hazardous Waste Characterization
  – Waste Evaluation
    • Generator knowledge, lab analysis, msds
  – Types of Hazardous Waste
    • Excluded, Listed, and Characteristic wastes
    • Hazardous Waste Mixtures

• Generator Categories
  – Counting your hazardous waste
  – Episodic generators
  – How to reduce hazardous waste

• Resources
Resource Conservation and Recovery Act (RCRA) Cradle-To-Grave Management
**Generator** – any person, by site, whose act or process produces or causes a hazardous waste to become subject to the hazardous waste rules.

Under Ohio’s laws, **all** wastes must be evaluated and documented by the generator.

In order for a material to be a hazardous waste, it must first be considered a **waste**.
When does a material become a waste?

A material becomes a waste when destined for disposal.
Waste Evaluation Requirement

Don’t throw any waste into the trash unless you have confirmed and documented that it is NOT a hazardous waste.
Waste Evaluation Requirements

- Resources may include:
  - Lab analysis
  - Generator knowledge
    - Information from vendor/supplier
    - Material Safety Data Sheet (MSDS)
    - Process information

** Need to keep documentation on file for 3 years to show how you determined your waste is non-hazardous.
Steps To Properly Evaluate Your Waste

1st – Determine if your waste is excluded

2nd – Determine if your waste is listed

3rd – Determine if your waste exhibits a characteristic
Exclusions and Exceptions...

- **Exclusions**
  - Ohio Administrative Code rule 3745-51-04
    - Samples sent to laboratory
    - Allowable discharges to public sewer
    - Household hazardous waste

- **Materials that will be recycled, reused or reclaimed**
  - Only applies to certain materials
  - Remain wastes if:
    - Placed on the land
    - Accumulated speculatively
Steps To Properly Evaluate Your Waste

2nd – Determine if your waste is listed
Listed Hazardous Wastes

• Non-specific waste sources (F listed)
  – OAC rule 3745-51-31

• Specific waste sources (K listed)
  – OAC rule 3745-51-32

• Unused discarded commercial chemical products (P and U listed)
  – OAC rule 3745-51-33
F Listed Hazardous Wastes

• Non-specific sources
  – Meaning from any type of process

• Examples
  – Spent solvents / Parts washer solvents
    ➢ F001, F002, F003, F004, F005
<table>
<thead>
<tr>
<th>Hazardous Waste Number</th>
<th>Hazardous Waste Description</th>
<th>Hazard Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>F001</td>
<td>The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten per cent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.</td>
<td>(T)</td>
</tr>
<tr>
<td>F003</td>
<td>The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten per cent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.</td>
<td>(I) *</td>
</tr>
</tbody>
</table>
K Listed Hazardous Wastes

• Specific waste sources
  – Meaning from a specific source or industry

• Examples
  – Wood preserving - K001
  – Iron and steel production
    ➢ Arc furnace dust - K061
    ➢ Spent pickle liquor - K062
### K Listing Table Example

<table>
<thead>
<tr>
<th>Hazardous Waste Number</th>
<th>Hazardous Waste Description</th>
<th>Hazard Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood preservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K001</td>
<td>Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.</td>
<td>(T)</td>
</tr>
<tr>
<td>Iron &amp; Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K061</td>
<td>Emission control dust/sludge from the primary production of steel in electric furnaces</td>
<td>(T)</td>
</tr>
<tr>
<td>K062</td>
<td>Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332)</td>
<td>(C)(T)</td>
</tr>
</tbody>
</table>
P or U Listed Hazardous Wastes

Must be an unused commercial chemical product

• Examples of P listed hazardous wastes:
  – Acetic acid – P058
  – Copper cyanide – P029

• Examples of U listed hazardous wastes:
  – Acetone – U002
  – Mercury – U151
Where You May Generate P or U Listed Hazardous Waste?

• Outdated chemicals – laboratory clean-outs

• Science laboratories

• Photo laboratories

• Medical facilities (Pharmaceuticals)

• Chemicals used for HVAC systems
“Acute” Hazardous Waste?

• Has nothing to do with appearance…

• Most P listed hazardous wastes and F020, F021, F022, F023, F026 and F027.

• Listed hazardous waste designated with an “H” hazard code.
<table>
<thead>
<tr>
<th>Hazardous Waste Number</th>
<th>Hazardous Waste Description</th>
<th>Hazard Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>F021....................</td>
<td>Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.</td>
<td>(H)</td>
</tr>
<tr>
<td>F022....................</td>
<td>Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.</td>
<td>(H)</td>
</tr>
</tbody>
</table>
Steps To Properly Evaluate Your Waste

3rd – Determine if your waste exhibits a characteristic
Characteristic Hazardous Wastes

4 categories of characteristic hazardous wastes (D001 – D043 codes):

- Ignitable
- Corrosive
- Reactive
- Toxic
Ignitable Hazardous Wastes

- Flash point <140 F
- Usually a liquid
- D001 hazardous waste code

Examples include:
- Paint waste
- Degreasers
- Solvents
Corrosive Hazardous Wastes

- pH < 2 or pH > 12.5
- Usually a liquid
- D002 hazardous waste code

Examples include:
- Waste acids
- Alkaline cleaning fluids
- Waste battery acids
 Reactive Hazardous Wastes

- Explosive, unstable, reacts violently with water
- **D003** hazardous waste code
  - Examples include:
    - Waste bleaches
    - Other oxidizers
    - Lithium Sulfur Batteries
Toxic Hazardous Wastes

- Contain toxic constituents above certain concentrations
  - Heavy metals, insecticides, herbicides and other organics
- Determined by Toxicity Characteristic Leaching Procedure (TCLP)
- D004 through D043 hazardous waste codes
  - Examples include:
    - Electronic equipment containing lead
    - Photographic fixer containing silver
    - Fluorescent lights (can be managed as universal waste)
<table>
<thead>
<tr>
<th>Ohio EPA Hazardous Waste No.</th>
<th>Contaminant</th>
<th>CAS No.</th>
<th>Regulatory Level (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D004</td>
<td>Arsenic</td>
<td>7440-38-2</td>
<td>5.0</td>
</tr>
<tr>
<td>D005</td>
<td>Barium</td>
<td>7440-39-3</td>
<td>100.0</td>
</tr>
<tr>
<td>D006</td>
<td>Cadmium</td>
<td>7440-43-9</td>
<td>1.0</td>
</tr>
<tr>
<td>D007</td>
<td>Chromium</td>
<td>7440-47-3</td>
<td>5.0</td>
</tr>
<tr>
<td>D008</td>
<td>Lead</td>
<td>7439-92-1</td>
<td>5.0</td>
</tr>
<tr>
<td>D009</td>
<td>Mercury</td>
<td>7439-97-6</td>
<td>0.2</td>
</tr>
<tr>
<td>D010</td>
<td>Selenium</td>
<td>7782-49-2</td>
<td>1.0</td>
</tr>
<tr>
<td>D011</td>
<td>Silver</td>
<td>7440-22-4</td>
<td>5.0</td>
</tr>
</tbody>
</table>
Mixture / Derived-From

Mixture Rule
• waste mixed with listed hazardous waste remains a listed hazardous waste
  – Example - Spills

Derived-From Rule
• any waste derived-from the treatment, storage, or disposal of a listed hazardous waste remains a listed hazardous waste
  – Example – Still bottoms
Do I Have A Hazardous Waste?

Is it excluded?
- Yes: Not a hazardous waste.
- No:
  - Is the waste on Ohio EPA’s F, K, P or U lists?
    - Yes: You have a listed hazardous waste
    - No:
      - Does the waste have any hazardous waste characteristics?
        - Yes: You have a listed and characteristic hazardous waste
        - No: Not a hazardous waste
Generator Categories
3 Hazardous Waste Generator Categories

Conditionally Exempt Small Quantity Generator (CESQG)
- \(< 220\) lbs/month (about \(\frac{1}{2}\) of a 55-gallon drum)
- \(< 2.2\) lbs/month of “acute” hazardous waste
- Never accumulates > 5, 55-gallon drums onsite

Small Quantity Generator (SQG)
- 220 to 2,200 lbs/month (\(\frac{1}{2}\) up to 5, 55-gallon drums)
- Never accumulates 30, 55-gallon drums onsite

Large Quantity Generator (LQG)
- over 2,200 lbs/month (over 5, 55-gallon drums)
- > 2.2 lbs/month of “acute” hazardous waste
Determining Your Category

• Total weight of hazardous waste that you generate (create) in any given month of the calendar year;
  – For example: Hazardous waste that you generate between September 1\textsuperscript{st} and September 30\textsuperscript{th}

\textbf{AND}

• Total amount of hazardous waste on-site at any given time (only for CESQGs and SQGs)

\textbf{NOTE:} Generator categories are NOT determined by the weight of hazardous waste shipped off-site.
Conditionally Exempt Small Quantity Generator

Less Regulations

Large Quantity Generator

More Regulations
When do I start counting my waste?

Waste counted when generated
  – Removed from the process
  – No longer usable product
Examples of what to count…

- All listed and characteristic hazardous wastes that are:
  - Accumulated prior to treatment, disposal or recycling
  - Generated as still bottom or sludge and removed from process equipment
Examples of what NOT to count...

- Laboratory samples
- Recyclable materials
  - Examples: electronics and scrap metal
- Hazardous waste remaining in empty container
- Wastes that are recycled, without prior storage, in an on-site recycling unit
  - Solvent distillation unit
What NOT to count…(continued)

• Waste residues in raw material storage/production units
• Wastes in elementary neutralization units, totally enclosed treatment facility or wastewater treatment unit – no prior storage
• Discharge to sewer – no prior storage
• Used oil (existing webinar)
• Lead acid batteries under “old rule”
• Universal wastes (existing webinar)
  – Batteries, light bulbs, mercury-containing devices
What If I Change Generator Categories?

• Termed episodic generation

• Must manage your hazardous waste under all applicable generator requirements for hazardous wastes generated that month for as long as that waste remains on-site
How Do I Reduce My Hazardous Waste?

• Implement pollution prevention (P2)
  – Eliminating waste at the source
  – Use less-hazardous products
  – Take advantage of FREE OCAPP P2 assessment

• Recycle when possible
  – Electronics
  – Universal waste (batteries, bulbs, mercury-containing devices)
  – Scrap metal
  – Paint waste
  – epawebapps.epa.state.oh.us/Recyclers/jsp/search.jsp

• Avoid mixing waste streams
  – Keep waste streams segregated
  – Label containers/tanks
Ohio EPA Resources

Non-regulatory (we’re not inspectors!!!)
Confidential (what we see and hear stays between us!)
Free (cheaper than hired consultants!)

One-stop shop for Assistance
Hotline (800) 329-7518
www.epa.ohio.gov/ocapp

Dan Sowry: 614-728-8575
dan.sowry@epa.state.oh.us
Questions???