

2011 Compliance Assistance Conference



**Advanced Topics in Hazardous Waste
Part 1**
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From the Cradle to the Grave

Advanced topics in hazardous waste

PART 1

When is something a waste?

- Defined in [OAC rule 3745-51-02](#)
- A waste is a “discarded material”
- “Discarded material” is:
 - Abandoned, as explained below; or
 - Recycled, as explained below; or
 - Considered inherently waste-like, as explained below; or
 - A military munition identified as a waste in rule 3745-266-202 of the

Material is abandoned when

- Disposed of; or
- Burned or incinerated; or
- Is accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated

Recycled- important definitions

- A material is "recycled" if it is used, reused, or reclaimed
- A material is "**reclaimed**" if it is processed to recover a usable product, or if it is regenerated.
- A material is **used or reused** if it is either:
 - Employed as an ingredient in an industrial process to make a product
 - Employed in a particular function or application as an effective substitute for a commercial product

Definitions

- Spent Material- a material that has been used and as a result of contamination is not longer serve the purpose for which it is intended without processing
- Commercial product- unused product that exhibit a characteristic or that are listed in OAC rule 3745-51-33
- Sludge – any solid, semi-solid or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility (does not include treated discharge from a wastewater treatment plant)

Definitions

- By-Product- material that is not one of the primary products of a production process and is not solely or separately produced by the production process. By-product does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process.
- Scrap metal-is bits and pieces of metal parts or metal pieces that may be combined together with bolts or soldering, which when worn or superfluous can be recycled

Definitions

- Prompt scrap metal-generated by the metal working/fabrication industries, and includes such scrap metal as turnings, cuttings, punchings, and borings.
- Home scrap metal-generated by steel mills, foundries, and refineries, such as turnings, cuttings, punchings, and borings.
- Processed scrap metal-has been manually or physically altered either to separate it into distinct materials to enhance economic value, or to improve the handling of materials. (baled, shredded, sheared, chopped, crushed, flattened, cut, melted, or sorted, agglomerated.)

Materials that are being reclaimed

- **WASTES**
 - Spent materials
 - Listed wastes
- **NOT WASTES**
 - Characteristic by-products
 - Characteristic sludge
 - Characteristic prompt scrap metal, home scrap metal and processed scrap metal

Materials that are used or reused

- Used directly without processing as an ingredient to make a product or as a substitute for a commercial chemical product
- Not wastes except when
 - Burned directly for energy or used to produce a fuel
 - Used on the ground or in a product that is placed on the ground, or
 - Speculatively accumulated

It's a waste now what?

- You must ask yourself:
 - Is it exempted by OAC 3745-51-04?
 - Is it listed in OAC rules 3745-51-31 through 3745-51-33?
 - Does it exhibit a characteristic in OAC rules 3745-51-21 through 3745-51-24 as determined through testing or applying knowledge of the process and materials used (generator knowledge)?

3745-51-04 exemptions

- Household waste
- Hazardous waste that is legally put in the sewer (domestic sewage)
- Drill cuttings and produced waters from oil and gas exploration and production
- Hot drained used oil filters
- Media and debris from BUSTR cleanups that are hazardous only for TCLP organics
- Dredged material managed under Army Corp permit

Why are listed wastes hazardous wastes?

- Only has to meet listing description
- Criteria for listing include:
 - Characteristic
 - Fatal to humans in low doses
 - Contains toxic constituents (nature and concentration in the waste)
 - Potential for migration of constituent under plausible mismanagement scenarios managed
 - Bioaccumulation and persistence
- Even if the toxic constituents are not present in your waste it is listed if it meets the description and it hasn't been delisted by USEPA

Does Ohio have its own listed wastes?

- No, but director has the authority to list wastes.
- Director cannot list wastes USEPA delisted or excluded or declined to list.

Things to know about characteristic wastes.

- Tests are on representative sample of the waste
- Ignitable flash point test only for liquids
- No test for ignitable solids and reactive wastes.
- Generator knowledge must be based on materials and processes used can use other folks data if it can be confidently applied to your waste
- MSD sheets often don't provide enough info to be used alone

Land Disposal Restrictions

Preparation for the Grave

Land Disposal Restrictions

Purpose

- Reduce the toxicity or mobility of HWs or hazardous constituents in order to minimize the short and long term threats to HH&E from the land disposal of HWs

Land Disposal Restrictions

- Accomplish purpose by:
 - Requiring the treatment of HWs to specified levels before they are land disposal (i.e., placed on the land)
 - Prohibiting dilution

Land Disposal Restrictions

- Required by Congress - Hazardous and Solid Waste Amendments of 1984 (HSWA)
- Took EPA 12 years to develop the program
 - it was adopted in 4 phases

Land Disposal Restrictions

- Land Disposal: Placement of HW into a land-based waste management unit
 - Landfill
 - Surface impoundment
 - Waste pile
 - Throwing it out the back door

Land Disposal Restrictions

Applicability

- LDRs apply ...
 - Only to hazardous waste (HW)
 - At the point of HW generation
 - When any portion of a HW will be land disposed

Land Disposal Restrictions

Applicability

- LDRs do NOT apply to...
 - HW generated by conditionally exempt small quantity generators (CESQG)
 - Farmers who dispose of HW on their farms
 - De minimis losses

Land Disposal Restrictions Treatment Standards

- LDR treatment standards:
 - NOT risk-based
 - They are based on best available technology
 - Listed as treatment technology or numeric level

Land Disposal Restrictions Treatment Standards

- LDR treatment standards:
 - Provided for all listed & characteristic HWs
 - Must be met prior to HW being land disposed
 - Found in the Table in OAC rule 3745-270-40

Land Disposal Restrictions Treatment Standards

- LDR treatment standards table contains:
 - Waste code
 - Waste subcategory
 - Treatability group
 - Wastewater (< 1% TOC, <1% TSS)
 - Nonwastewater
 - Treatment standard
 - Numeric
 - Technology

Land Disposal Restrictions

Example LDR Table

Waste Code	Subcategory	Regulated Haz. Constituent	Wastewaters	NonWastewaters
F007	N/A	Cadmium	N/A	0.19mg/l TCLP
		Chromium(Total)	2.77 mg/l	0.86 mg.l TCLP
		Cyanides(Total)	1.2 mg/l	590 mg/kg
		Cyanides(Amenable)	0.86 mg/l	30 mg/kg
		Lead	0.69 mg/l	0.37 mg/l TCLP
		Nickel	3.98 mg/l	5.0 mg/l TCLP
		Silver	NA	0.30 mg/l TCLP

Land Disposal Restrictions

Example LDR Table

Waste Code	Subcategory	Regulated Haz. Constituent	Wastewaters	NonWastewaters
D001	Ignitable except high TOC subcat.	N/A	DEACT meet 3745-270-48	DEACT meet 3745-270-48 or RORGS, CMBST
	High TOC ignitable $\geq 10\%$ TOC	N/A	N/A	RORGS, CMBST POLYM

Land Disposal Restrictions Underlying Hazardous Constituents

- Underlying hazardous constituent:
 - A hazardous constituent reasonably expected to be present at the point of generation of the HW at a concentration greater than the universal treatment standard (UTS) in OAC 3745-270-48

Land Disposal Restrictions Underlying Hazardous Constituents

- Underlying hazardous constituents apply to:
 - Characteristic HW
 - Listed HW that exhibits a characteristic for which it is not listed, see Appendix to OAC 3745-51-30, and which is not treated under the LDR treatment standard for the listed HW

Land Disposal Restrictions

Regulatory Status of Treated HW

- Treated listed HWs are still defined as listed HWs
 - Mngt. & disposal regulated under HW rules
- Treated characteristic HWs are no longer defined as HWs
 - Disposal regulated under non-hazardous waste program

Land Disposal Restrictions Generator Requirements

- Notification requirements
- Waste analysis plan
 - if HW is treated on-site to meet LDRs
- Recordkeeping

Land Disposal Restrictions Notification Form

- Notification form tells TSD what the waste is & for what constituents it must be treated
- Generator sends a notification form to the treatment facility w/ HW shipment when:
 - It's the first time the generator sent the HW to that treatment facility, or
 - The waste has changed in composition causing a change in the treatment standard

Land Disposal Restrictions Required Information on Notification Form

- See OAC rule 3745-270-07(A)
- Hazardous waste codes for waste
 - E.g., D001, K062, F006
- Manifest number of the HW shipment

Land Disposal Restrictions

Required Information on Notification Form

- Specify whether:
 - HW meets LDR treatment standard
 - Certification statement applies; exact wording applies
 - HW does not meet LDRs and needs treated
 - Treatment facility needs to determine if LDRs are met (exact wording applies)

Land Disposal Restrictions

Required Information on Notification Form

- If the treatment facility does not test all treated wastes for all constituents then:
 - List the constituents contained in F001– F005 & F039
 - List the underlying constituents in characteristic HWs (or listed HW if applicable)

Land Disposal Restrictions

Required Information on Notification Form

- Specify whether the HW is:
 - Wastewater, or
 - Nonwastewater
 - Note: A liquid HW can be a nonwastewater
- Specify the waste subcategory (if applicable)

Land Disposal Restrictions

Required Information on Notification Form

- Hazardous debris:
 - If using the alternative treatment standard indicate this on the form and list constituents that need treated
- Contaminated soil:
 - If using alternative treatment standard indicate this on form, list constituents or listed HW codes to be treated

Land Disposal Restrictions

One-time Notice for Excluded HW

- Excluded HWs include:
 - HW discharged to wastewater treatment system
 - HW recycled by direct use/reuse
 - Characteristic sludges/byproducts that are reclaimed
 - HW disposed by deep-well injection

Land Disposal Restrictions Generator Treatment

- Generators who treat HW on-site to meet LDRs must:
 - Develop a waste analysis plan (WAP)
 - Maintain WAP on-site
 - Comply with the LDR notification form for HW disposed offsite

Land Disposal Restrictions

The WAP

- Is based on a representative sample analysis of the HW
- Contains detailed description and protocol of the treatment process
- States testing frequency

Land Disposal Restrictions Recordkeeping

- Information used to evaluate HW using generator knowledge of process
- Representative sampling results
- Notification form
- One-time notice for HWs excluded from LDR treatment standards

Land Disposal Restrictions Debris and Soil

- Can be classified as a HW due to contamination, it “contains” a HW
- LDRs apply to contaminated debris & soil
- May treat using
 - Standard LDRs, or
 - Alternative treatment standards
 - See OAC 3745-270-45 and 3745-270-49

- Questions?