

## Waste Characterization and Generator Status

Jenny Bennett  
DEQ, Waste Management and  
Radiological Protection Division  
[bennettj@michigan.gov](mailto:bennettj@michigan.gov)

### Presentation Goals

- Identify Regulations Requiring Characterization
- Identify Waste Survey and Waste Characterization Steps
- Identify How to Calculate Hazardous Waste Generator Status

### Do I Need to Know All of This?

- Hazardous waste regulations...
  - apply to all businesses, including municipalities, hospitals, & service industries, not just manufacturing industries
  - are written broadly to address hazards posed by all waste streams

### Why Cover These Topics?

- Hazardous waste regulations require each business to...
  - Evaluate the character & composition of their wastes
  - Determine the total weight of all hazardous waste generated each month
  - Determine their legal disposal options
- Less hazardous waste = less regulation and more disposal options under the law
- There is no one best answer for how to dispose of waste for all businesses and locations!!!

### Waste Characterization Regulations

- Act 451, Michigan Natural Resources & Environmental Protection Act:
  - Part 111, Hazardous
  - Part 121, Liquid Industrial By-Products
  - Part 115, Solid Waste
  - Part 169, Scrap Tires
- Act 368, Michigan Public Health Code:
  - Part 138, Medical Waste Regulatory Act
  - Part 2, Ionizing Radiation Rules
- Federal Toxic Substance Control Act (TSCA)

### Waste Characterization - Where do I start?

- Perform a waste survey to identify what wastes are generated at your facility
- Tour your entire facility and inventory all waste streams
- Don't overlook identifying & characterizing ALL waste streams

### Waste Characterization - Waste Survey

- Drains, discontinued lines
- Catch basins
- Office activities, electronics, batteries, lamps, thermostats
- Aerosol cans, ignitable & could have TCLP issues
- Remodeling/demolition debris, gym flooring, abrasive blasting
- Fleet maintenance, like antifreeze and mercury switches, parts washer, used oil

- Laboratory waste, art class waste
- Solvent contaminated rags and textiles

**Waste Characterization - Who does it?**

- Do the waste characterization yourself
- Hire a consultant
- Use the disposal company services
- Use a combination of the above

**Waste Characterization - Knowledge**

- SDS
- Facility Process Information
- Technical Information
- Manufacturer Information
- Hazardous Waste Listings
- Testing
- Cautionary example for use of knowledge: Analyses of wastes from dry cleaning processes using the newer "green" solvents are testing positive for chromium

**Waste Characterization Basics**

- Characteristic Hazardous Waste (D wastes)  
*Waste stream found to be ignitable, corrosive, reactive, and/or toxic by testing*
- Listed Hazardous Waste (F, K, P & U wastes)  
*Common waste stream known to be hazardous without testing*
- Hazardous Waste Mixture Rule  
*Mixture of a listed hazardous waste with other non-hazardous wastes is a listed hazardous waste*
- Hazardous Waste Derived from Rule  
*Residues derived from treating a listed hazardous waste is listed hazardous waste*

**Waste Characterization - Basic Steps**

1. Is waste listed? Review lists of waste types & codes in rules.
2. Is waste characteristic? Analytic test or by knowledge (MSDS, knowledge of process, etc.).
3. Does an exclusion or exemption apply?
4. Do other regulations apply? (liquid industrial, solid waste, etc.)
5. Create & maintain records of characterization for at least 3 years from the date waste was last shipped offsite.
6. Re-characterize if change process or materials.

**Waste Characterization - Step 1: What are Listed Hazardous Wastes?**

- F Codes (Table 203a) – Wastes from non-specific sources (e.g. spent chlorinated solvents, metal treatment wastewaters & sludges).
- K Codes (Table 204a) – Wastes from specific industries (2014 rule change – Michigan Haz Wastes 001K and 002K rescinded).
- Waste Characterization  
What are listed hazardous wastes?
- P & U Codes (Table 205a-c) – Commercial chemical products, off-specification products, container and spill residues including some Michigan only U Codes (e.g., formaldehyde, parathion, benzene, DDT, xylene)
  - 2014 and 2017 Rule Changes Rescinded Some Michigan Only U Hazardous Wastes/Codes
  - P Codes are all acutely hazardous.

**Waste Characterization Step 2 - What Are Characteristic Hazardous Waste**

- Characteristic Hazardous Waste & Codes:
- Ignitable - D001
- Corrosive - D002
- Reactive - D003
- Toxic - D004 – D043 (Table 201a)
- Severely Toxic – 001S - 007S (Table 202, includes dioxins & furans)

**Characteristic Hazardous Waste - Common Tests**

- Flash point – Used for testing Ignitability < 140 F (D001)
  - Examples: *paints, solvents*
- pH – Used for testing corrosivity  $\leq 2$  or  $\geq 12.5$  (D002)
  - Examples: *acids, bases*
- Reactivity – Test as required for DOT classification for materials that are unstable at normal conditions, reacts violently with water, explode, and/or emit toxic gas (D003)
  - Examples: *lithium hydride & trichlorosilane*
- TCLP (Toxicity Characteristic Leaching Procedure) - Used for testing leaching potential for Table 201a hazardous constituents (D004-D043)
  - Examples: *Paints or sludges containing metals or MEK, contaminated media*
- Total Halogens – Used for testing used oils for chlorine, fluorine, bromine, etc. to determine if a “presumed” hazardous waste
  - Examples: *Used to process used oil into lubricants, specification or off-specification used oil fuels*

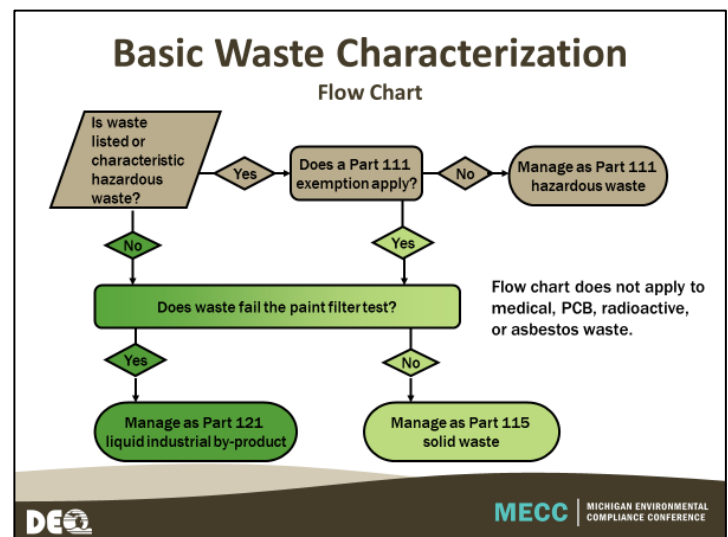
**Waste Characterization - Step 3 – Common Exemptions and Exclusions**

- Rules 202, 203, 204, 206, 207 and 228 of Part 111 (not all inclusive)
- Wastewater discharges to POTW's that are approved by that sewer authority are exempted at the point of discharge to the sewer
- Batteries, pesticides, mercury devices, electric lamps, pharmaceuticals, consumer electronics & antifreeze handled as Universal Waste enjoy a partial exemption
- Wastes that are used or reused in a process to make a product are excluded provided there is no reclamation - Beware of sham recycling & get DEQ concurrence on exemption. Supporting documents required
- Laboratory samples are exempt until being discarded
- Used oils that are recycled
- Petroleum contaminated media from leaking UST systems that fail the TCLP for D018 – D043 only & are being remediated under DEQ approval pursuant to Part 213
- Off-specification fuel (gasoline, kerosene, diesel, etc.) being recycled for use as fuel or burned as fuel
- Materials remaining in manufacturing units that would otherwise be hazardous wastes - if taken out of service the material becomes a hazardous waste (degreasers, paint pots)
- Hazardous wastes from which precious metals are recovered (partial exemption)
- Dredge spoils from projects permitted by the U.S. Army Corps of Engineers or DEQ
- Laundered rags that are reused
- Solvent contaminated wipes
- Rags & Textiles - Disposable wipes under newly adopted federal rule
  - Took effect April 2017
  - Excludes wipes contaminated with solvents that are laundered and reused or disposed of properly
  - To be excluded, must be managed in closed, labeled containers and cannot contain free

- liquids when sent for laundering and reuse or disposal
  - o Requires records and cannot accumulate wipes for longer than 180 days
  - o See new Solvent Contaminated Wipes Guide
- Recycled materials (not all see 40 CFR, Part 261.2, Table 1 [*Some reclaimed materials not considered solid wastes under RCRA, although they may exhibit a haz waste characteristic (e.g., commercial chemical products, sludges and by-products. Also, commercial chemical products being speculatively accumulated are not solid wastes under RCRA.*])
- Hazardous Secondary Materials – NEW!!!!
  - o Certain materials when reclaimed to meet legitimacy criteria in Rule 232 are excluded from being a waste under hazardous waste regulation.
  - o Learn more by joining
- Household waste, including single & multiple residences, hotels & motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, & day-use recreational areas
- Empty container that help non-acute hazardous waste (Rule 207) - After all *non-acute* hazardous waste or liquid industrial by-product has been removed using common practices:
  - o No more than 1 inch or not more than 3.0% by weight of the total capacity of the container for containers less  $\leq$  to 119 gallons
  - o No more than 1 inch or not more than 0.3% by weight of the total capacity of the container for containers  $>$  than 119 gallons
- Empty container that acute or severely toxic hazardous waste must be
  - o Triple rinse with appropriate solvent or cleaned by proven equivalent method
  - o Remove inner liner that prevented contact with container
  - o If listed due to characteristic, empty if no longer exhibits the characteristic
  - o Rinse water/removed residue would be hazardous waste based on knowledge
- Empty containers that held a compressed hazardous waste gas must be emptied such that the
  - o Container pressure is equal to atmospheric pressure
  - o Container is not clogged
  - o No audible liquids in container when shaken

#### Waste Characterization Step 4 – What is a Liquid Industrial By-product

- Part 121 of Act 451
- Determine by using the Paint Filter Test, Method 9095 in EPA SW-846
- If there are any free liquids in the by-product or if the by-product is thinner than butter at or  $<$  100 F, it should be managed as a liquid industrial waste
- Liquid hazardous wastes from a CESQG.
- Some wastewater including most mobile power washing wastewater, carpet cleaning wastewater, food processing wastewaters.
- Most sludges from trench drains or blind sumps (unless there's been a release making it a hazardous waste).
- Includes liquid wastes from other locations besides “industrial” sites (e.g. municipal, health care, etc.).
- Most antifreeze
- Storm sewer cleanout waste
- Grease trap waste
- Most used oils being recycled
- Off-specification fuels being recycled



### Waste Characterization Step 5 - Waste Characterization Record

- Records for each waste stream may include:
  - Waste type/description
  - Source of waste
  - Test results
  - Waste analysis records
  - SDS
  - Sample procedure
  - Representative sample information
- See the Waste Characterization Steps & Questions Guide and Optional Waste Characterization Record

### Waste Characterization Step 6 - Recharacterize

- Re-characterize if process or materials change!

### Hazardous Waste Generator Status

- Conditionally Exempt Small Quantity Generator (CESQG)
  - Monthly hazardous waste generation <220 lbs. or ~ 1/2 drum
  - Total hazardous waste accumulation must always be less than 2200 pounds (5 drums)
  - Wastes are properly disposed under other regulations
  - Records of waste characterization, generator status, and lawful disposal are maintained for 3 years
- Small Quantity Generator (SQG)
  - Monthly hazardous waste generation > 220 lbs. to < 2,200 lbs. or ~ 1/2 to 5 drums
  - Total hazardous waste accumulation must always be less than 13,200 pounds (30 drums)
- Large Quantity Generator (LQG)
  - Generates  $\geq$  2200 pounds of non-acute hazardous waste per month
  - Generates and accumulates  $\geq$  2.2 pounds of acute or severely toxic waste
- Calculating Amount of Hazardous Waste Generated:
  - Calculate the amount *generated*, not the amount *shipped*
  - Calculate the amount in *pounds or kilograms*
  - Include hazardous waste *treated and/or disposed on-site* unless it is hard piped to POTW
  - Do not include hazardous waste managed as a *universal waste*
  - Do not include *liquid industrial by-product and/or used oil*
  - Do not include waste specifically excluded from Part 111 like:
    - Scrap metal being recycled
    - Contaminated fuel being recycled into fuel
    - POTW approved direct discharges
    - Excluded solvent wipes
    - Hazardous secondary materials
  - Review total/maximum amount of hazardous waste generated and accumulated at any 1 time during the month.
  - Compare amount of hazardous waste generated and total accumulated during the month to the CESQG, SQG, and LQG definitions/limits.
- See Chapter 2.3 and 2.4 in DEQ Guidebook at [www.Michigan.gov/ehsguide](http://www.Michigan.gov/ehsguide)

