



# Waste 101

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## Presentation Goal

- Provide an overview of the different types of waste under state and federal environmental regulations

## Types of Waste

- Hazardous Waste
- Solid Waste
- Liquid Industrial By-Product
- PCB Waste
- Medical Waste
- Radioactive Waste

## How Do I Start

- Identify what wastes are generated at your facility
- Tour your entire facility and inventory all waste streams

## What is a Waste

- A waste is any discarded material
- A waste can be solid, liquid, semisolid, or gaseous

## Waste Survey – Don't over think it!

- Product = Waffle Batter
- Process = Waffle Iron
- Product = Waffle
- Not going to predict a grilled cheese
- Think about new products, intermediates, and processes
- Finally the eventual "waste"

## What is a Waste

- A waste is any material that cannot be used for its original intended purpose, including materials that are:
  - Burned as fuel
  - Accumulated and recycled or reclaimed
  - Discarded, abandoned or disposed

## Hazardous Waste

- Regulated under [Part 111](#) of Act 451 and the [Part 111 Rules](#)
- Apply to waste determined to be a threat to human health or the environment
- Apply to all businesses, including municipalities, hospitals, and service industries, not just manufacturing industries
  - As a general rule of thumb, less hazardous waste equals 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

- Is the waste listed on lists in the hazardous waste rules
- Does the waste exhibit a characteristic that makes it hazardous
  - Ignitable
  - Corrosive
  - Toxic
  - Reactive

## Listed Waste Codes

- Listed In [Part 111](#) hazardous waste rules
- Wastes from non-specific sources like spent solvents and metal treatment sludges
  - Table 203a
  - F codes
- Wastes from specific industries like petroleum refineries and chemical manufacturers
  - Table 204a
  - K codes
- Commercial chemical products, off-specification products, container and spill residues like nicotine formaldehyde, DDT, xylene
  - Materials with sole active ingredient
  - Tables 205 a, b & c
  - P and U codes

## Waste Survey – Don't over think it!

- Product and process - wood and fire
- Waste - ashes

## Characteristic Waste Codes

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

## Characteristic Waste Common Test

- Flash point – Used for testing ignitability < 140 F
  - Examples: paints, solvents
- pH – Used for testing corrosivity  $\leq 2$  or  $\geq 12.5$ 
  - Examples: acids, bases
- Reactivity – Test as required for DOT classification for materials that are unstable at normal conditions, reacts violently with water, explode, etc.
  - Examples: lithium hydride & trichlorosilane
- TCLP (Toxicity Characteristic Leaching Procedure) - Used for testing leaching potential for the 40 Table 201a hazardous constituents
  - Examples: Paints or sludges containing metals or MEK, contaminated media

## Waste Survey – Don't over think it!

- Product - eggs and coffee
- Waste – compost, eggshells and coffee grounds

### Common Exemptions & Exclusions

- Wastewater discharges to wastewater treatment plants that are *authorized* by the receiving 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](#)
- New hazardous waste rules will adopt aerosol cans as a universal waste eligible for streamlined management
- Most [used oil](#) when recycled
- Petroleum contaminated media from leaking UST systems that fail the TCLP for D018 – D043 only and are being remediated under Part 213 of Act 451
- Off-specification fuel (gas, kerosene, diesel, etc.) being recycled into 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)
- Solvent wipes managed to meet wipes exemption, whether reused or disposed
- Household waste, including single & multiple residences, hotels & motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, & day-use recreational areas
- Conditionally Exempt Small Quantity Generator or [Very Small Quantity Generator](#) Exemption
  - Monthly hazardous waste generation < 220 lbs. or ~ 1/2 drum non-acute and 2.2 lbs. acute
  - Total hazardous waste accumulation ALWAYS less than 2200 pounds (5 drums)
  - Wastes are properly disposed under other regulations

**NEW**

**NEW NAME**

### Hazardous Waste Generator Category

- Hazardous waste generator category is based on:
  - Total weight of hazardous waste generated each calendar month AND
  - The amount of hazardous waste accumulated at any one time
- This information is used to determine the handling and disposal requirements for the waste!!!
- Do not count the following wastes when determining your monthly generator category:
  - Waste excluded from definition of hazardous waste (i.e., recycled scrap metal, recycled fuel, direct discharges approved by receiving sewer authority, etc.)
  - Universal waste
  - Used oil
  - Empty containers
  - Liquid industrial by-products
- Episodic Hazardous Waste Generation
  - New rules coming soon will allow a site to bump up once in a calendar year and stay in their generator category if they meet new “Episodic Event” requirements

**NEW**



### Hazardous Waste Generator Categories

Generator Type	Maximum amount of non-acute hazardous waste generated per month	Approximate maximum volume of non-acute hazardous waste generated per month	Maximum amount of acute or severely toxic hazardous waste generated per month	Maximum amount of contaminated soil, water or other debris from clean-up of acute or severely toxic hazardous waste generated per month
Very Small Quantity Generators (VSQG)	≤ 100 kilograms or less (220 lbs.)	≤ half a 55-gallon drum or ≤ 25 gallons	≤ 1 kilogram (2.2 lbs.)	≤ 100 kilograms
Small Quantity Generators (SQG)	> 100 kilograms (220 lbs.) but < 1,000 kilograms (2,200 lbs.)	> half a 55-gallon drum and < five 55-gallon drums, or > 25 gallons and < 250 gallons	≤ 1 kilogram (2.2 lbs.)	≤ 100 kilograms
Large Quantity Generators (LQG)	≥ 1,000 kilograms or more (2,200 lbs.) or more	≥ five 55-gallon drums or ≥ 250 gallons	> 1 kilogram (2.2 lbs.)	> 100 kilograms

Waste Webinar Series

EGLE

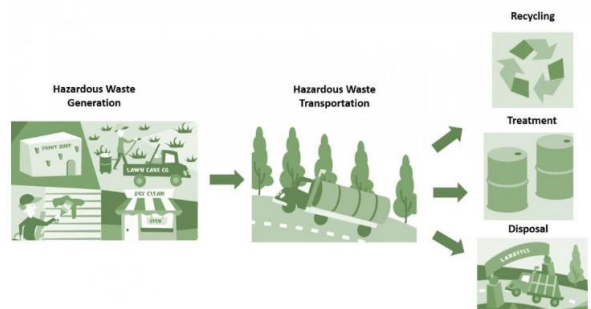
- Requires notification
- Management as a hazardous waste for disposal
- Labeling
- Disposal at a hazardous waste licensed receiving facility within a limited timeframe
- Maximum amount of non-acute hazardous waste that can be accumulated on site.
  - VSQG - 1000 kg (2200 lbs.)
  - SQG - 6000 kg (13,200 lbs.)
  - LQG - No maximum amount
- Maximum time period before waste must be shipped.
  - VSQG - No time limit if never exceeding 2200 lbs.
  - SQG - 180 days unless shipped over 220 miles, then 270 days
  - LQG - 90 days

**Hazardous Waste Generator Resources**

- [Summary of Generator Requirements](#)
- Guidebook, Chapter 2 at [Michigan.gov/EHSGuide](http://Michigan.gov/EHSGuide)

**Hazardous Waste Tracking**

- Since 1976, hazardous waste requires "cradle to grave" [manifesting](#), meaning hazardous waste is tracked from the time it is created, while it is transported, treated, stored, and until it is ultimately disposed.



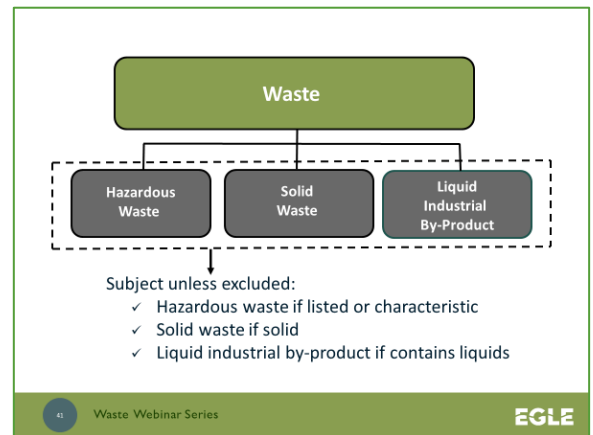
RCRA's Cradle-to-Grave Hazardous Waste Management System

**Waste Survey – Don't over think it!**

- Product and process - New oil, then in use in auto
- Waste - Used oil after drained, destined for recycle

**Solid Waste**

- If the waste meets a hazardous waste exemptions or exclusions, it is subject to non-hazardous solid waste regulation if solid
- Regulated under [Part 115](#) of Act 451 and [Part 115 Rules](#)
- Solid waste must be disposed in a licensed Municipal Solid Waste Landfill or a permitted Municipal Solid Waste Incinerator or better (hazardous waste licensed facility) unless it is managed to meet a solid waste exemption (recycled, diverted, inert, beneficial use materials, etc.)



**Landfill Prohibited Materials**

- Used Oil
- Liquid Waste
- Lead Acid Batteries
- Hazardous Waste from SQG & LQG
- Low Level Radioactive Waste
- PCB Waste
- Medical Waste
- Empty Drums
- Whole Tires
- Returnable Beverage Containers
- Sewage
- Asbestos (unless landfill approved)

**Solid Waste Recycling Exemptions**

- Concrete Grinding Slurry
- Ethanol

- Lime Sludge
- Manure, Paunch and Pen Waste
- Fish Waste
- Inert Materials
  - Inert means there are no listed hazardous wastes, or hazardous substances present in a waste at concentrations above current Part 201 cleanup criteria
  - Inert materials can include dredged spoils, excavated soils, cement kiln dust, asphalt, certain construction materials, rock, etc.
  - Inert materials can be used as alternate daily cover in landfills with EGLE approval or as fill
- [Beneficial Reuse Materials](#)
  - Beneficial use recycles discarded materials like coal and wood bottom ash, paper pulp, cement kiln dust and foundry sand for use in industrial settings
  - Part 115 identifies specific use conditions that must be met for specific beneficial use materials listed
- [Diverted Waste](#)
  - Household hazardous wastes like the following diverted from landfills to an environmentally preferred management method:
    - Medication
    - Computer, TVs, Cell Phones & Tablets
    - Household Paints & Solvents
    - Fluorescent Light Bulbs
    - Batteries
    - Used Oil
    - Can include VSQG waste
    - Liquid Industrial By-Product (LIB)
  - Most are recycled, however some materials like pharmaceuticals and pesticides are destroyed via incineration to prevent the chemicals from cycling in our environment.

### Liquid Industrial By-Products

- Regulated under [Part 121](#) of Act 451
- Formally known as liquid industrial waste
- Determined by using the Paint Filter Test, EPA Method 9095 of SW-846.
- If there are any free liquids in it should be managed as a liquid industrial by-product
- Includes liquid VSQG hazardous waste
- Includes other liquid waste materials that are not hazardous, hazardous exempt, etc. but are regulated as liquid industrial by-products
  - Used oil
  - Catch basin clean-out waste
  - Antifreeze
  - Contaminated fuel being recycled
  - Wastewaters
  - Brine
  - Fats, oils, grease
  - Leachate
  - [Some sanitary clean-out waste](#)
- [Generators of liquid industrial by-products](#) must
  - Have characterization & shipping records

- Manage liquid industrial by-products in tanks or containers that are in good condition, closed and have no leaks
- Labeled containers/tanks to identify their contents
- Protect containers/tanks from weather
- Must have exterior of all vehicles, containers and tanks free of use oil residues
- Prevent release to ground
- Use permitted registered liquid industrial by-products transporter or maintain spill insurance if self-transporting
- Receive confirmation that each liquid industrial by-products shipment arrived at an appropriate liquid industrial by-products designated facility

### Liquid Industrial By-Product [Shipping Document](#)

- Name and address of the generator
- The name of the transporter
- The type and volume of liquid industrial by-product in the shipment
- The date the by-product was shipped off site from the generator
- The name, address and Site Identification Number of the designated facility

### Toxic Substances Control Act (TSCA)

- Applies to the manufacture, processing, distribution, marking, use, storage, cleanup, and disposal of PCB-containing wastes
- Regulation of TSCA is implemented by EPA
- Sources of PCBs include dielectric fluids, heat transfer fluids, capacitors, hydraulic fluids, etc.
- Toxic Substances Control Act (TSCA)
- There are generally 3 action levels of total PCB concentrations:
  - <50 ppm
  - >/= 50ppm to <500 ppm
  - >/= 500 ppm
- For more information:
  - See Chapter 4 of guidebook at [Michigan.gov/EHSGuide](http://Michigan.gov/EHSGuide) or [www.epa.gov/pcb](http://www.epa.gov/pcb)
  - Call EPA Region 5 at 312-886-7890 or 800-621-8431

### Scrap Tires

- Regulated by [Part 169](#) of Act 451
- Requirements for scrap tire generators include:
  - Store tires safely at the location of generation
  - Ensure scrap tires are taken to a registered tire collection site
  - Use only register hauler
  - Obtain and keep copies of scrap tire manifests
  - All NON-New tires are regulated as “scrap tires”
- Can look up registered haulers and collection sites at [Michigan.gov/scraptires](http://Michigan.gov/scraptires)
- Can self-transport up to 10 tires without a manifest to a registered collection locations
- See Chapter 2 of guidebook at [Michigan.gov/EHSGuide](http://Michigan.gov/EHSGuide) for more information
- Need adequate aisle space to prevent fire hazards and ensure safety

### Scrap Tire Hauler Registration

- Transporters register
- Must carry copy of current hauler registration

- Registration numbers must be visibly displayed on vehicle
- Manifest required for transports >10 tires

### Medical Waste

- Regulated under [Part 138](#) of Act 368, Michigan Public Health Code and the [Part 138 Rules](#)
- Includes infectious biohazardous waste like:
  - Blood and body fluids from human and animals
  - Pathological waste like organs and tissue
  - Infectious agents like live or attenuated viruses in vaccinations
  - Sharps or needles and scalpels
- Medical waste does not include pharmaceuticals unless they contain live or attenuated vaccines in which case they're dual/mixed waste
- Many agencies regulate medical waste, including
  - EGLE – Regulates how producers must manage medical waste from point of generation to disposal
  - U.S. EPA – Produces guidelines for land disposal and requires air permitting for incineration
  - MSP/U.S. DOT – Specifies packaging, labeling, securing and shipping documents for safe transport
  - MIOSHA – Specified work protections for handling of blood borne infection materials
  - Local Health Departments – Local ordinances
- Medical Waste Regulatory Act requires:
  - Producer registration every 3 years
  - [Medical Waste Management Plan](#)
  - Employee training records
  - Proper packaging
  - Storage no longer than 90 days
  - Shipment records
- See Guidebook, Chapter 2 at [Michigan.gov/EHSGuide](#) and [Michigan.gov/EGLEMedWaste](#)

### Radioactive Wastes

- NARM and LLMW wastes are possibly exempt from the definition of hazardous waste if certain conditions apply, such as if it meets the acceptance criteria of a low-level radioactive waste disposal facility or eligible NARM waste
- NARM and LLMW waste shall meet or be treated to meet LDR treatment standards
- See Guidebook, Chapter 10 at [Michigan.gov/EHSGuide](#)

### Asbestos

- Used in more than 3000 products over the past 100 years for its insulation and fire protective properties
- Common products include pipe insulation, floor and ceiling tiles, and electrical appliances
- Found in a wide range of settings including industrial and manufacturing, school and universities, and residential properties
- Generally disposed in Type II Municipal Solid Waste landfill if the landfill has been approved to accept asbestos-containing wastes
- Regulated by MIOSHA
- Regulated by EGLE, Air Quality Division (AQD) under the National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Asbestos is the general name of a group of minerals with a similar propensity to become airborne

and cause damage to lungs. These minerals include Chrysotile, Amosite, and Crocidolite

- Additional information is available through the AQD, NESHAPs Asbestos Coordinator at 517-373-7064
- See Guidebook, Chapter 1 at [Michigan.gov/EHSGuide](https://www.michigan.gov/EHSGuide) and [Michigan.gov/EGLEAsbestos](https://www.michigan.gov/EGLEAsbestos)

#### **Additional Resources**

- [Waste Characterization Guidance](#)
- [Waste Characterization Steps and Questions](#)
- [Waste Characterization Example Record](#)