

Waste Characterization and Generator Status

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WHAT TYPE OF WASTES DO I GENERATE?



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

Why Cover These Topics?

Less hazardous waste = less regulation & 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 Survey

Drains and Discontinued Lines



Drains



Discontinued lines

Waste Survey

Catch Basins



Waste Survey Office Activities

Electronics



Batteries



Electric lamps



Thermostats

Waste Survey

Aerosol Cans



Can crushing & puncturing

Ignitable & could have TCLP issues



Waste Survey

Remodeling/Demolition Debris

Demolition Debris



Gym Flooring



Abrasive Blasting



Waste Survey

Fleet Maintenance



Antifreeze &
Mercury Switches



Parts Washer



Used Oil

Waste Survey

Laboratory Waste



Art Class Waste

Waste Survey

Rags & Textiles



Orion Assembly
4555 Giddings Rd.
Orion, MI 48359
MID000718544

**HAZARDOUS WASTE
FLAMMABLE
SOLVENT RAGS**

EPA Waste Code: D001

Date Drum is Full: _____ Container Number **8468**

In Case of Emergency Call Plant Security 5252
For Waste Pick Up Call **5926**

31 6811 0000

SOLVENT RAGS Container Number **8468**

Waste Site Number: _____

Rags & Textiles

NEW FEDERAL RULE (CURRENTLY BEING ADOPTED BY MI)

- Took effect January 2014, reviewing for adoption
- Excludes wipes that are contaminated with solvents listed as hazardous wastes under RCRA that are cleaned or disposed of properly
- To be excluded, solvent-contaminated wipes must be managed in closed, labeled containers and cannot contain free liquids when sent for cleaning or disposal
- Requires records and cannot accumulate wipes for longer than 180 days

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

- MSDS
- Facility Process Information
- Technical Information
- Manufacturer Information
- Hazardous Waste Listings



Testing

Waste Characterization

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)**
 - A waste stream found to be ignitable, corrosive, reactive, and/or toxic by testing.
- **Listed Hazardous Waste (F, K, P & U wastes)**
 - A 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 there is a change in process or materials.

Waste Characterization

Step 1

Listed Hazardous Waste

Waste Characterization

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 (*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) *(Rule change – Some Michigan Haz Wastes rescinded)*.
- *P Codes are all acutely hazardous.*

Waste Characterization

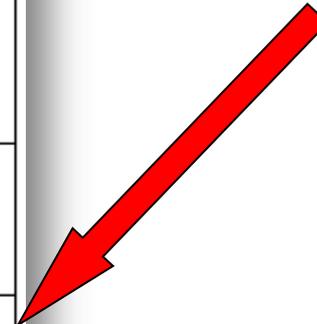
Listed Hazardous Waste Codes

70

Table 203a

EPA Hazardous Waste Number	Hazardous Waste From Nonspecific Sources	Hazard Code
F020	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 tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)
F021	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	(H)
F022	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	(H)
F023	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tri- and tetrachlorophenols. This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)

Acutely hazardous when "H" appears in Hazard Code Column.



Waste Characterization

Step 2

Characteristic Hazardous Waste

Waste Characterization

What are characteristic hazardous wastes?

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 ≤ 2 or ≥ 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

Characteristic Hazardous Waste Common Tests

- **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

Waste Characterization

Step 3

Exemptions and Exclusions

(Rules 202, 203, 204, 206, 207 and 228 of Part 111 -not all inclusive)

Waste Characterization

What are exemptions & exclusions?

- 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*

Waste Characterization

What are exemptions & exclusions?

- 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

Waste Characterization

What are exemptions & exclusions?

- 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)
- Laundered rags that are reused that would otherwise be a hazardous waste
- 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.

Waste Characterization

What are exemptions & exclusions?

- 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.]
- Household waste, including single & multiple residences, hotels & motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, & day-use recreational areas
- Empty container residues

Empty Containers

(Rule 207)

After all *non-acute hazardous waste* or liquid industrial by-product has been removed using common practices:

- 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
- 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 Containers (Rule 207)

Acute Hazardous or Severely Toxic Waste:

- Triple rinse with appropriate solvent or cleaned by proven equivalent method
- Remove inner liner that prevented contact with container
- If listed due to characteristic, empty if no longer exhibits the characteristic
- Rinse water/removed residue would be hazardous waste based on knowledge

Empty Containers

(Rule 207)

Compressed Gas:

- Container pressure is equal to atmospheric pressure
- Container is not clogged
- No audible liquids in container when shaken

Waste Characterization

Step 4

Liquid Industrial By-Product

Waste Characterization

What is 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

Waste Characterization

What is Liquid Industrial By-Product?

- 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.).

Waste Characterization

What is Liquid Industrial By-Product?

- 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

(Rule 307)

Waste Characterization

Waste Characterization Records

Records for each waste stream may include:

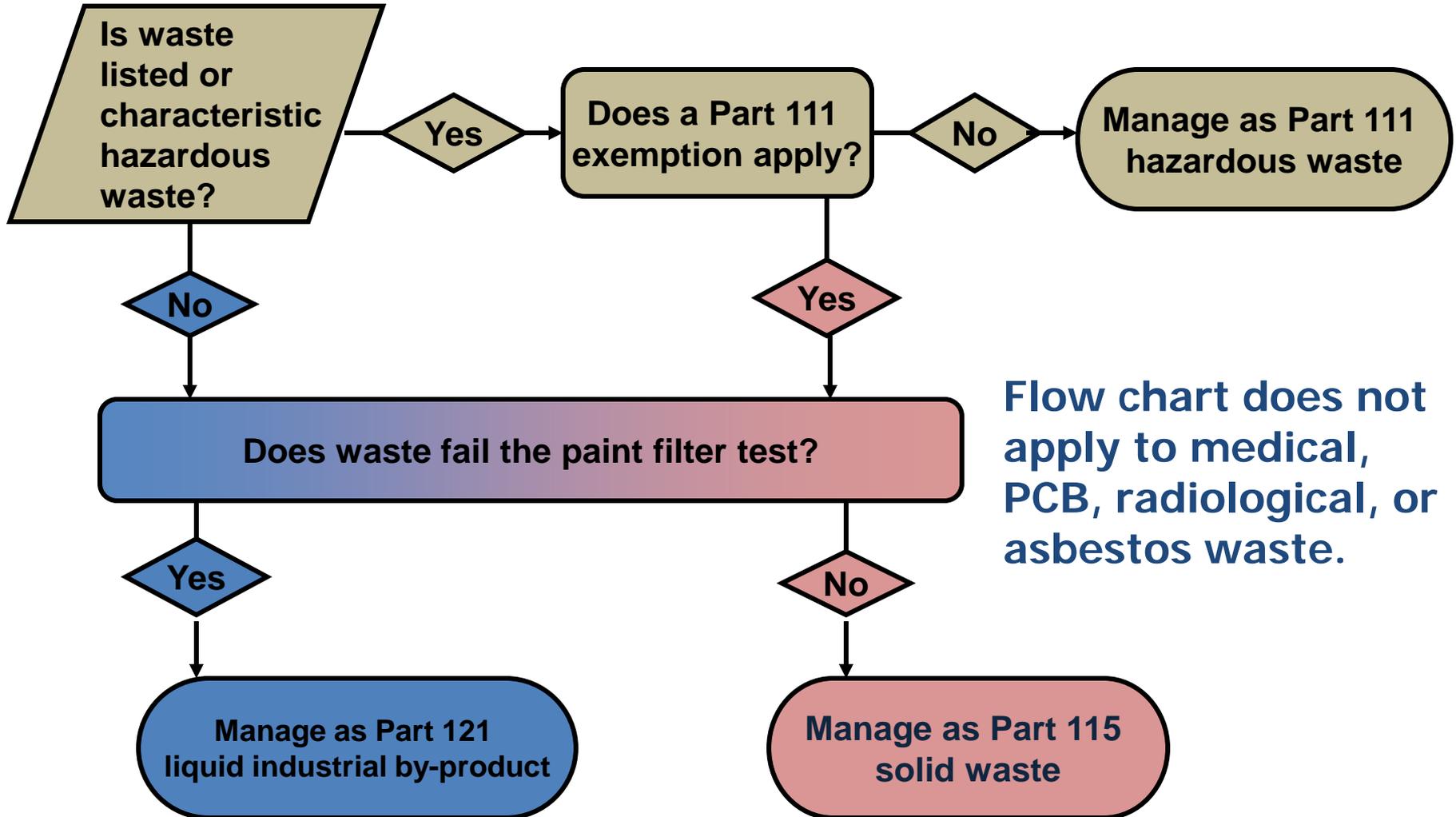
- Waste type/description
- Source of waste
- Test results
- Waste analysis records
- MSDS
- Sample procedure
- Representative sample information

Waste Characterization

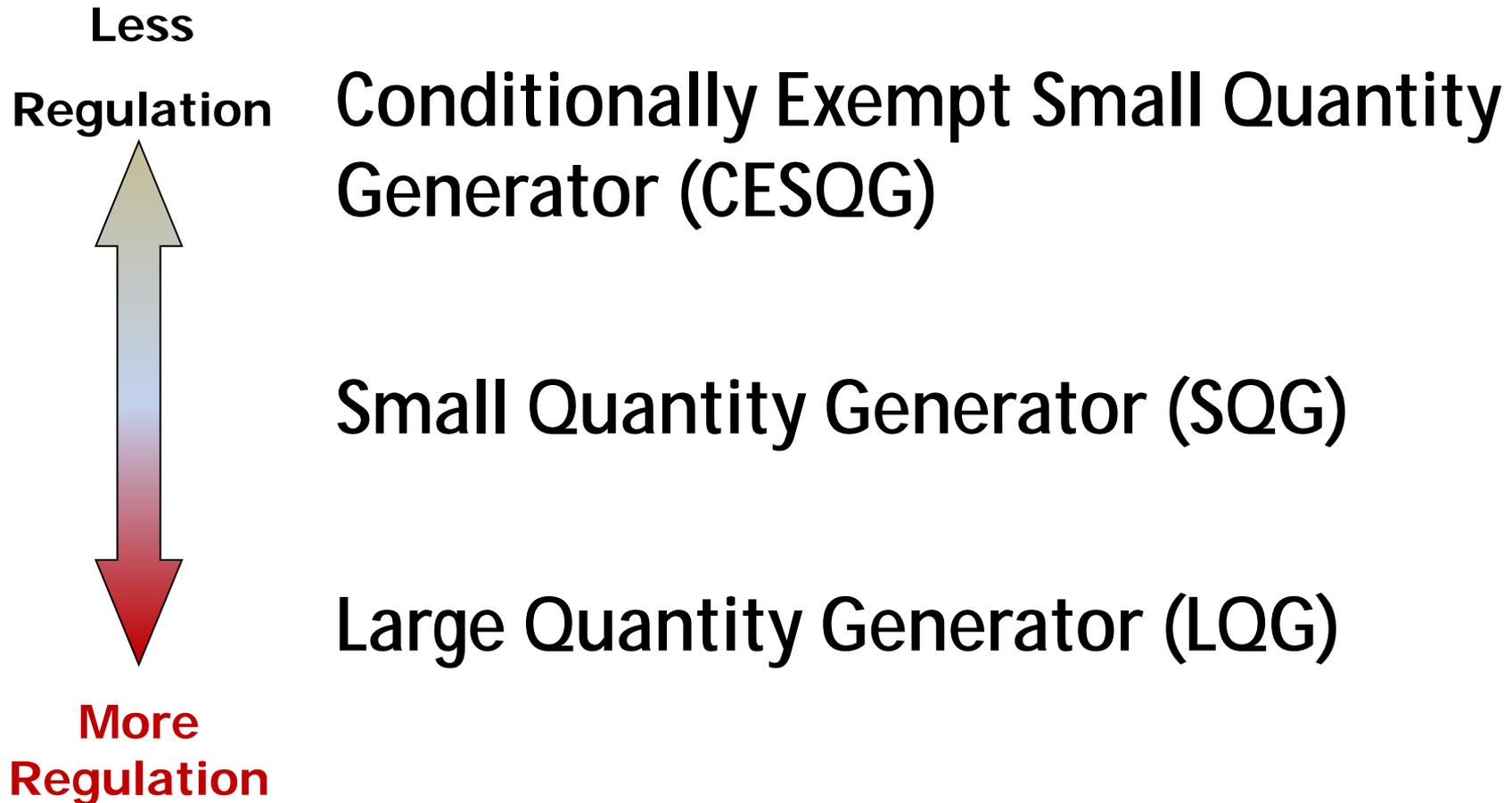
Step 6

Re-characterize if process or materials change!

Basic Waste Characterization Flow Chart



Hazardous Waste Generator Status



Hazardous Waste Generator Status

Conditionally Exempt Small Quantity Generator (CESQG) (Rule 205)

- Monthly haz waste generation < 220 lbs or ~ 1/2 drum 
- Total haz waste accumulation must always be less than 2200 pounds (5 drums)
- Wastes are properly disposed under other regs
- Records of waste characterization and generator status are maintained for 3 years

Hazardous Waste Generator Status

Small Quantity Generator (SQG)

- Monthly hazardous waste generation 220 lbs – 2,200 lbs or ~ ½ to 5 drums



- Total hazardous waste accumulation must always be less than 13,200 pounds (30 drums)

Hazardous Waste Generator Status

Large Quantity Generator (LQG)

- Generates 2200 pounds of non-acute hazardous waste per month



- Generates and accumulates 2.2 pounds of acute or severely toxic waste

Hazardous Waste Generator Status

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

Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

- 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

Examples: scrap metal being recycled, fuel being recycled, or POTW approved direct discharges

Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

- 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.
- Generator limits are found in Rule 306 of the Part 111 rules.

Questions





www.michigan.gov/deqevents

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FOR PROTECTING
MICHIGAN'S
ENVIRONMENT!**