

WASTE CHARACTERIZATION AND HAZARDOUS WASTE GENERATOR STATUS

GUIDANCE

WASTE CHARACTERIZATION DETERMINATION

Michigan's hazardous waste and liquid industrial by-products regulations apply to facilities generating waste. The only exception is for waste generated at a residence that is composed primarily of materials found in wastes generated by consumers in their homes (household waste). The hazardous waste and liquid industrial by-products regulations apply to all businesses (for profit and non-profit), municipalities, healthcare providers, service industries, administrative offices, churches, etc. The environmental waste regulations were written broadly to ensure that unwanted materials are handled, recycled, and disposed safely in a manner that protects public health, safety, and our environment. They were also written to encourage reuse, recycling, and the use of less toxic materials. As a result, they provide regulatory relief to facilities that minimize the amount and toxicity of the hazardous waste they generate.

Unwanted materials that can no longer be used for their original intended purpose without first being reclaimed or recycled are subject to waste regulations implemented by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Materials Management Division. Most waste materials are classified as either a hazardous waste, liquid industrial by-product, or solid waste. When evaluating a waste to determine how it is classified, the waste regulations require waste generators to follow prescriptive steps. If the materials used at the site change, the processes that produce the waste change, or the nature of the waste changes due to storage and/or handling, the waste must be re-evaluated.

This guidance provides details about how to characterize waste and how to determine a site's generator category, also called generator status. It clarifies who does the characterization, the characterization steps, common tests, and common exemptions or exclusions from hazardous waste regulation. Accurate characterization and generator category determination is important because if you don't know what type of waste you have or your hazardous waste generator category, you cannot determine the handling, recycling, and disposal requirements that apply to your unwanted materials.

WHO IS RESPONSIBLE FOR WASTE CHARACTERIZATION?

Everyone handling or managing a waste stream is both personally and professionally responsible for properly managing the waste from its "cradle to grave," beginning with performing a representative, accurate waste determination. "Cradle-to-grave" responsibilities and liabilities apply to the generator, transporter, and the receiving treatment, storage, and disposal facility.

WHO DOES THE WASTE CHARACTERIZATION?

A site generating waste may:

- Hire a consultant or use a disposal company's waste characterization services to characterize each of its waste streams. When someone else characterizes a generator's waste, the waste generator remains responsible for proper characterization, handling, and recycling or disposal. As a result, understanding the basic waste characterization principles is key to ensuring a consultant or disposal vendor is providing the services you need to ensure compliance.
- Characterize each waste stream using site staff with technical expertise in making waste characterization determinations.

WHEN MUST A WASTE CHARACTERIZATION DETERMINATION BE PERFORMED?

A waste generator must evaluate the waste to determine if it is considered a listed or characteristically hazardous waste at the point of generation, before any dilution, mixing, or other alteration of the waste occurs. The point of generation for a listed hazardous waste is when it first meets the listing description. The point of generation for a mixture of listed hazardous waste with other waste is when the waste materials are mixed. The point of generation for a characteristically hazardous waste is when the waste first exhibits the characteristic of ignitability, corrosivity, reactivity and/or toxicity.

WHAT ARE THE WASTE CHARACTERIZATION STEPS?

To ensure each waste stream is identified and properly evaluated, a waste survey should be conducted. Walk through the entire site. Make a list of all the waste streams regardless of whether they are recycled or disposed. Hazardous waste and liquid industrial by-products can be found on the shop/plant floor, in production or service areas, in offices, etc. Other hazardous wastes or liquid industrial by-products can be incidentally generated from building (expansion and renovation) or property maintenance activities. Consider evaluating new products before purchase so their handling and recycling or disposal requirements and costs are known in advance of generating a new waste stream.

The following are some commonly generated hazardous wastes that may be overlooked and the reasons why they may be hazardous noted in parenthesis.

- Spent fluorescent lamps or bulbs and other lighting fixtures (toxic for mercury and other metals).
- Disposable rags containing free liquids with a flashpoint of less than 140 degrees Fahrenheit or used with a listed solvent (ignitability, spontaneous combustion, used with “F” listed solvents).
- Spent activated carbon media, included in some air filters (may contain “F” listed solvents).
- Used solvents with low flashpoint (toxic, ignitability).
- Used solvents with high flashpoints (toxic).
- Drain or sump sludge, including loading/unloading area trenches (toxic and ignitability due to gasoline from trucks or other spills).
- Painting materials and waste including paint thinners, enamel reducers, epoxies, primers, enamels, solvent-based paints, and paint booth filters (contains “F” listed solvents, toxic metals, ignitability).
- Aerosol cans that are not empty (contains “U” or “P” chemicals, ignitability, toxic).
- Solvent-based adhesives (ignitability).
- Batteries - lead acid (toxic for lead and corrosive acids), lithium (reactive and ignitable), and dry cell (sometimes toxic for lead and mercury).
- Used water-based or synthetic lubricating fluids containing high concentrations of heavy metals (toxic metals of concern include lead, chromium, cadmium, and barium).
- [Electronic equipment](#) like computers, printers, cell phones, and televisions (may contain lead in the cathode ray tubes, batteries, and other toxic metals).
- Discarded, unused chemical products from inventory reduction activities (any of the commercial chemical products on the “P” and “U” lists).
- Medical kits with devices containing mercury like thermometers or antiseptics containing mercury (toxic for mercury).
- [Undeployed airbag modules or inflators](#) (reactive).
- Contaminated gasoline that is not re-refined into a fuel product (toxic for benzene, may be ignitable).
- [Pharmaceuticals](#) (ignitable, toxic, corrosive, and reactive).

Again, if a material cannot be used “as is” for its original intended purpose without processing (e.g. filtering, chemical treatment, etc.), it is a waste that must be evaluated and properly managed whether it is recycled or disposed. Use the following [steps and questions](#) to evaluate each waste stream.

Step 1 – IS THE WASTE A "LISTED" HAZARDOUS WASTE?

To be considered a listed hazardous waste, either the chemical or the process generating the waste will be specifically identified in the hazardous waste regulations. Federal listed hazardous waste codes include a “F,” “K,” “P,” or “U” along with the specific hazardous waste number. State listed hazardous waste codes includes an “S” in the hazardous waste number. Listed hazardous wastes are described in Rule 213 of the Michigan [hazardous waste regulations](#).

- **F Codes** are found in Table 203a. The F-coded wastes include common hazardous waste streams generated by many different types of commercial and industrial operations. Examples include spent chlorinated or toxic solvents from degreasing operations and metal treatment wastewaters, and sludges.
- **K Codes** are found in Table 204a. The K-coded wastes are from specific industries. Examples include specific types of wastes generated from specific industries like petroleum or chemical refining, wood treatment operations, and pesticide manufacture.
- **P and U Codes** are found in Tables 205a-c. The P and U-coded wastes include unused commercial chemical products (CCPs) (chemical grade products), off-specification CCPs, and CCP container and spill residues. Examples include formaldehyde, parathion, benzene, DDT, xylene, and certain pharmaceuticals like arsenic trioxide, nicotine, and warfarin.
- **S Codes** are found in Table 202. The S-coded wastes include dioxins and furans and are Michigan specific identified hazardous wastes.

All codes with a “P” in their hazardous waste number are considered acutely toxic hazardous wastes. All codes with an “S” in their hazardous waste number are severely toxic. All codes with an “(H)” in the “Hazard Code” column to the right of the waste description are also acutely toxic hazardous wastes. This information is important when evaluating the amount of hazardous waste generated monthly and making a generator category determination. After making a listed hazardous waste determination, proceed to step 2.

Step 2 - DOES THE WASTE EXHIBIT A CHARACTERISTIC THAT MAKES IT A HAZARDOUS WASTE?

After reviewing the waste for being listed in step 1, review whether it exhibits a characteristic or characteristics that make it a hazardous waste. This will ensure you recognize all the hazards associated with the waste and have it labeled to meet the various labeling requirements that may apply. A waste can be subject to hazardous waste regulation as a characteristic hazardous waste if it is determined to be ignitable, toxic, corrosive, reactive, or severely toxic as defined under Rule 212 of the Michigan [hazardous waste regulations](#).

- **Ignitable** hazardous waste is a waste that starts burning easily. This includes liquids with a **flashpoint** less than 140 degrees Fahrenheit, solids that spontaneously ignite, ignitable compressed gasses and oxidizers. Ignitable compressed gasses are those that meet the criteria in 40 CFR 261.21(a)(3), not the criteria referenced in the U.S. DOT regulations. This includes gases that form flammable mixtures in air. Oxidizers are materials that may, generally by yielding oxygen, cause or enhance the combustion of other materials and is defined in 49 CFR 173.127, which is a U.S. DOT regulation. Examples of wastes that are characteristic hazardous wastes due to their ignitability include mineral spirits, methyl ethyl ketone, methyl isobutyl ketone, and other solvents, solvent-based paints, solvent-soaked rags, gasoline, cleaning fluids, naphtha, sludges containing petroleum, and ignitable compressed gas like hydrogen, propane, and acetylene. Ignitable hazardous wastes have a hazardous waste code of D001.
- **Corrosive** hazardous wastes are liquids that have the ability to dissolve steel. Corrosive hazardous wastes exhibit a pH less than or equal to 2.0 or greater than or equal to 12.5 standard units. Examples of wastes

that are characteristic hazardous wastes due to their corrosivity include caustics like alkaline cleaners and acids like battery acids. Corrosive hazardous wastes have a hazardous waste code of D002.

- **Reactive** hazardous waste is unstable at normal atmospheric conditions, reacts violently, and can cause serious harm to human health and the environment. Reactive hazardous wastes include materials that react violently with water, are explosive, and/or undergo rapid or violent chemical reaction. For reactivity, use the same testing as otherwise required to meet U.S DOT requirements. Examples of wastes that are characteristic hazardous wastes due to their reactivity include lithium hydride, air bag inflators and modules, organic peroxides, cyanides, sulfides, nitroglycerine, trichlorosilane, and explosives. Reactive hazardous wastes have a hazardous waste code of D003.
- **Toxic** hazardous wastes are wastes that are poisonous to humans and other living organisms. A waste becomes regulated as a characteristically toxic hazardous waste if it contains one or more of the hazardous constituents found in Table 201a of the Michigan [hazardous waste regulations](#) at levels that meet or exceed the constituent levels listed when tested using the **Toxicity Characteristic Leaching Procedure (TCLP)** test. The TCLP test method or Test Method 1311 is found in the [U.S. EPA publication SW-846](#). It simulates typical solid waste landfill conditions and predicts whether toxic chemicals in the waste are likely to leach and eventually impact surface water or groundwater. If you are familiar with your process and know the constituents used in the process, it is not necessary to analyze your waste for every chemical. In addition, you may not have to analyze the waste for every constituent included on the “D” list (Table 201a) when evaluating your waste. For example, you may only need to perform a TCLP analysis for metals and volatiles if you know that the other constituents found in Table 201a are not present in the waste. If you are unsure of the types and concentrations of hazardous contaminants present in the waste, another cost-effective option is to first run a total analysis of the individual analytes on the sample. If the waste is dry (no liquids), divide the total analysis constituent concentration by 20 and then compare the resulting theoretical concentration to the regulatory limit in Table 201a. If no theoretical concentration equals or exceeds the regulatory limit, the solid waste does not have enough contaminant mass and therefore cannot exhibit the toxicity characteristic. Therefore, the TCLP may not need to be performed depending on landfill approval. This is sometimes referred to as the “20 times rule.” If the waste is a liquid or contains both liquids and solids, refer to the U.S. EPA [TCLP Questions](#) for use of totals analysis. For additional U.S. EPA information on use of totals analysis for waste characterization, go to <https://epa.gov/rcraonline> and search for “Total Waste Analysis.” Characteristically toxic hazardous wastes are assigned hazardous waste codes from D004 to D043. **NOTE:** Given an appropriate scenario, a totals analysis alone or in combination with the 20 times rule can be great tool; however, both the application and interpretation are complex, whereas a TCLP analysis is the regulatory standard.
- **Severely toxic** hazardous waste is a type of hazardous waste established by Michigan that is severely poisonous to humans and other living organisms. If a waste contains over 1.0 part per million (PPM) or more of a severely toxic material listed in Table 202, the material is a severely toxic hazardous waste. Severely toxic hazardous wastes are assigned hazardous waste codes 001S through 007S.

After determining if the waste is a listed hazardous waste and whether it exhibits a characteristic or characteristics that make it a hazardous waste, proceed to step 3.

Step 3 - IS THE WASTE SPECIFICALLY EXCLUDED, EXEMPTED, OR PARTIALLY EXEMPTED FROM THE HAZARDOUS WASTE REGULATIONS?

The hazardous waste regulations include many exclusions. Most exclusions are designed to prevent regulatory overlap, to encourage waste minimization, and/or to promote safe reclamation and recycling. Review whether the common exclusions and exemptions listed below apply to your waste. See the Michigan hazardous waste regulations for a complete list of exclusions and exemptions. Exclusions and exemptions are specific and conditional, meaning each condition must be met to be eligible for the regulatory relief.

Some commonly excluded, exempted, or partially exempted materials include:

- Household hazardous waste from single- and multiple-family residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreational areas.
- [Universal waste](#), which includes electric lamps (e.g. fluorescent, light-emitting diode and other lamps containing toxic metals), batteries (including lead acid, lithium, and dry cell that contain toxic metals), antifreeze, devices containing mercury, consumer electronics, pesticides, and pharmaceuticals, managed to meet the universal waste standards. As of the effective date of the revised Part 111 rules expected in spring of 2020, aerosol cans will also be a universal waste,
- Empty containers:
 1. For containers that held [non-acute](#) hazardous waste, the container is considered empty after first removing as much of the container contents as possible using common practices used to remove materials from the container type such as pouring, pumping, and aspirating, **and** then determining the amount of waste residue remaining in the container does not exceed:
 - 1 inch or not more than 3.0% by weight of the total capacity of the container for containers ≤ to 119 gallons or
 - 1 inch or not more than 0.3% by weight of the total capacity of the container for containers > than 119 gallons.
 2. For containers that held [acute](#) or [severely toxic](#) hazardous waste, the container is considered empty after:
 - the container is triple rinsed with appropriate solvent or cleaned by proven equivalent method or
 - the container's inner liner that prevented contact with container is removed.The rinse water and any removed residue would be a hazardous waste based on knowledge using the "[Mixture Rule](#)," as would the inner container liner that came in contact with the hazardous waste and was removed.
 3. For compressed gas containers, the container is considered empty when:
 - the pressure in the container is equal to atmospheric pressure,
 - the container is not clogged, and
 - there are no audible liquids in container when shaken.
- [Very small quantity generator](#) hazardous waste when managed to meet the exemption.
- [Solvent contaminated wipes](#) when managed to meet the exclusion.
- Scrap metal (bit and pieces of metal) when recycled and not [speculatively accumulated](#).
- Some materials being recycled like [hazardous secondary materials](#), [used oil filters](#) and [lead acid batteries](#) when managed to meet their exclusions.
- Wastewater discharges to a municipal wastewater treatment plant authorized by that receiving sewer authority as long as they aren't accumulated and managed in advance of being disposed via the sanitary sewer.
- Petroleum contaminated media from a leaking underground storage tank that fails the TCLP for D018 through D043, if they are being remediated under Michigan's underground storage tank regulations.
- Most petroleum-based [used oil](#) when it is recycled for reuse as a lubricant or burned for energy recovery. Petroleum-based used oil that exhibits more than 1,000 parts per million total halogens are presumed to have been mixed with halogenated hazardous waste and is subject to hazardous waste regulation unless the generator is able to [rebut the presumption](#) that the oil contains listed hazardous waste.

- Materials remaining in manufacturing units, until the unit is taken out of service or the material is removed from the unit (degreasers, paint pots, distillation unit, process equipment removed from service, etc.).
- Recycling of some commercial chemical products that exhibit only a hazardous waste characteristic (i.e. they are not a listed hazardous waste) and they are not speculatively accumulated. Examples include:
 - [Fuel that is re-refined into fuel](#),
 - [Air bags](#) (modulators and inflators) when legitimately reclaimed (module and inflators), and
 - Activated carbon containing only characteristically hazardous waste that is regenerated and reused as activated carbon without being speculatively accumulated.

If the waste is a listed and/or characteristically hazardous waste, skip forward to step 5. If the waste is neither a listed nor characteristic hazardous waste or is excluded or exempt from hazardous waste regulation, continue to step 4.

Step 4 – DO OTHER WASTE REGULATIONS APPLY?

Does the waste contain free liquids? If it does, it generally is subject to regulation as a liquid industrial by-product under the Michigan [liquid industrial by-products regulations](#). The paint filter test or test method 9095 found in the [U.S. EPA publication SW-846](#) is used to determine if a waste is a liquid industrial by-product. The test evaluates the presence of free liquids in a representative sample. When testing, a predetermined amount of the waste is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-minute test period, it is considered to contain free liquids and is subject to regulation as a liquid industrial by-product.

Like the hazardous waste regulations, there are exclusions intended to prevent regulatory overlap and to encourage recycling and safe management of liquid industrial by-products. The liquid industrial by-products exclusions are found in sections [12101\(n\)](#) and [12102a](#) of the liquid industrial by-products statute. Materials like fats, oil and grease, septage, biosolids, medical waste, and sanitary sewer clean-out waste may be [regulated under other regulations](#) designed to protect public health and the environment. Liquid waste exempted or partially exempted from the hazardous waste regulations must be managed to meet the liquid industrial by-products regulations unless it is specifically excluded from being subject to the liquid industrial by-products regulations.

Common liquid industrial by-product exclusions that promote recycling and safe disposal include:

- Petroleum-based [used oil](#) when directly burned to recover energy or used to produce a fuel. To meet this exclusion, the petroleum must be specification or off-specification used oil as defined in the hazardous waste regulations and burned as fuel at a Clean Air Act permitted source of air pollution. Note that [used oil](#) has requirements under both the hazardous waste regulations and the liquid industrial by-products regulations.
- A liquid fully contained inside a manufactured article, until the liquid is removed, or the manufactured equipment is discarded, at which point it becomes a liquid industrial by-product. Manufactured articles are designed for a purpose, not solely to provide safe access to chemicals present in a container. Examples of manufactured articles include batteries, light ballasts, electronic devices, and automobiles.
- A liquid vegetable or animal fat oil that is transported directly to a producer of biofuels for the purpose of converting the oil to biofuel.
- An off-specification fuel that was generated in a pipeline as the interface material from the mixture of two adjacent fuel products and that will be processed, by blending or by distillation or other refining, to produce a fuel product or fuel products.

- An off-specification fuel, that resulted from the commingling of off-specification fuel products or from phase separation in a gasoline and alcohol blend and that will be processed, by distillation or other refining, to produce fuel products.
- An off-specification fuel product transported directly to a distillation or refining facility to produce a fuel product or fuel products.
- A liquid residue that remains in a container after first removing as much of the container contents as possible using common practices used to remove the material from the container type such as pouring, pumping, and aspirating, **and** then determining the amount of waste residue remaining in the container does not exceed:
 - 1 inch or not more than 3.0% by weight of the total capacity of the container for containers ≤ to 110 gallons or
 - 1 inch or not more than 0.3% by weight of the total capacity of the container for containers > than 110 gallons.

Generally, only domestic wastewaters from cooking, laundry and bathing can be discharged to an on-site septic system. To discharge other, non-domestic wastewaters (e.g. any commercial or industrial wastewaters) to an on-site system, a [groundwater discharge permit](#) is needed unless the specific discharge is permitted by rule under the [water resource protection regulations](#). Contact EGLE's [groundwater permit program staff](#) for more details regarding on-site disposal of non-domestic wastewaters.

Is the waste a non-hazardous [solid waste](#), [scrap tire](#), or a special waste like [asbestos](#), [polychlorinated biphenyl \(PCB\) waste](#), [medical waste](#), or a [radioactive waste](#)? If the waste is not a hazardous waste or a liquid industrial by-product, it is generally a solid waste. However, there are other waste environmental regulations to consider. Handling of asbestos and PCB waste is subject to additional regulations under the federal [National Emission Standards for Hazardous Air Pollutants](#) and the federal [Toxic Substance Control Act](#). There are also [solid waste exclusions](#) that provide for safe use of some materials in specific circumstances. See the Michigan Guide to Environmental Health and Safety Regulation available on-line at [Michigan.gov/EHSGuide](#) to learn more about solid waste exclusions (Chapter 2), asbestos (Chapter 1), PCBs (Chapter 4), medical waste (Chapter 2), and radioactive materials (Chapter 10). After determining if the waste is a liquid industrial by-product, solid waste, or subject to other waste regulations proceed to step 5.

Step 5 - CREATE AND MAINTAIN A CHARACTERIZATION RECORD FOR AT LEAST THREE YEARS FROM THE DATE THE WASTE WAS LAST SHIPPED OFF-SITE

When documenting your characterization determination, use a [form](#) that includes the following basic information and follows the steps and questions used when making a waste characterization determination. It will make it easier to document your conclusions and to discuss your characterization determination with your recycling/disposal vendor and EGLE inspection staff:

- | | | |
|--------------------------------------|--|--|
| • Name of person completing form | • Waste sample details
{sample date(s), sample location(s), sample collection procedure(s), lab analysis method(s), etc.} | • Product name(s) for Safety Data Sheet(s) (SDSs) considered |
| • Date form was completed | | • Subpart AA, BB or CC applicability determination |
| • Waste description | | • Land disposal restriction underlying hazardous constituents, if applicable |
| • Waste type | | |
| • Narrative description of the waste | | |
| • Waste source | | |
| • Waste codes | | |

Include copies of all supporting sample reports, SDS(s), waste profiles, and other reference materials relied upon to reach your characterization determination. After creating a waste characterization record for each waste stream, proceed to step 6.

Step 6 - RE-CHARACTERIZE IF THE PROCESS OR MATERIALS CHANGE

If the materials used at the site change, the processes that produce the waste change, or the nature of the waste material changes due to storage and/or handling, the waste must be re-evaluated. The waste must be reevaluated any time its properties change as a result of exposure to the environment or other factors that affect how it is classified under these rules may change.

WHAT INFORMATION CAN BE USED TO MAKE THE WASTE DETERMINATION

Waste can be characterized using the generator's knowledge or by testing a representative sample.

Process knowledge may be used in making a *listed* or *characteristic* waste determination. Information used for making a *listed* waste determination may include the waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information. Information on the SDS or other supplier and manufacturer literature may be useful when you have unused product needing disposal. Knowledge that may be used in making a determination that the waste exhibits one or more *characteristics* of a hazardous waste includes process knowledge; feedstocks and other process inputs; knowledge of products, by-products, and intermediates produced by the manufacturing process; chemical or physical characterization of the wastes; information on the chemical and physical properties of the chemicals used or produced by the process or otherwise contained in the waste; or other reliable and relevant information about the properties of the waste or its constituents. An SDS often provides information about the flashpoint, pH, and if a discarded product is a hazardous waste or contains hazardous constituents. Note, however, that an SDS is not completely reliable for determining if a used material is a hazardous waste because it does not include information about contaminants that might be in the waste from use. Since the SDS is designed to meet occupational safety requirements, it also may not include all hazardous constituents requiring evaluation under the environmental regulations. A waste stream may be presumed (by knowledge) to contain certain constituents above regulatory thresholds for compliance purposes; however, testing may be required to adequately document a hazardous or non-hazardous waste determination.

Testing a representative sample of the waste can also be used to characterize a waste. A test method other than one set forth in the hazardous waste regulations or an equivalent method approved by the EGLE director may be used as part of the generator's knowledge to determine if a waste exhibits a hazardous characteristic. Testing is definitive in determining whether the waste is characteristically hazardous if the test method used is specifically identified in the hazardous waste regulations or is approved by the EGLE director, assuming a representative sample of the waste was evaluated.

When characterizing waste, follow the steps above and contact the receiving treatment and/or disposal company before testing. They will likely require specific tests or only accept data from specific laboratories. Ask the disposal company for a list of required tests, the purpose for the tests, approved testing methods, and acceptable laboratories. This should prevent you from spending money to perform unnecessary tests that do not meet the disposal company's requirements. As discussed above, the hazardous waste and liquid industrial by-products regulations identify the laboratory methods that must be used. EGLE relies upon the methods in the [Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria](#) for collecting representative samples.

Consider obtaining an estimate to collect and analyze the required number of representative samples from two or more environmental consultants, environmental [laboratories](#), or [disposal vendors](#). In some cases, the tests will save you money by showing that you do not have hazardous waste. When hiring testing services, use a reputable firm and obtain a written contract. The contract should clearly identify which specific services the company will provide. For example, instead of vague language about sampling waste, identify:

- Who is responsible for collecting samples.
- Who will arrange to have it analyzed.
- Who will arrange to have an expert look at the analysis results.
- Who will determine if the waste is hazardous and at which regulatory limit(s).

Waste samples being sent to laboratories are exempt from most of the hazardous waste regulations if it meets certain conditions. Submit the smallest sample amount as possible for testing, and the laboratory may return any remaining waste sample to the generator. The laboratory exemption in the regulations no longer applies when the sample is determined to be hazardous waste and is no longer needed for waste characterization purposes. Contact the laboratory about its procedures for accepting samples and follow all chain-of-custody protocol. When shipping the sample, you must meet U.S. Postal Service or [U.S. Department of Transportation](#) (U.S. DOT) labeling and shipping requirements. Specific U.S. DOT questions can be directed to [Michigan State Police](#) at 734-780-6534 or the U.S. DOT at 800-467-4922. If these agencies' regulations do not apply to the sample, it must be packed so it does not leak, spill, or vaporize. Waste samples being shipped to a laboratory are not required to be manifested, but the following information must accompany the shipment:

- Sample collector's name, mailing address, and telephone number.
- Laboratory's name, mailing address, and telephone number.
- Date of shipment.
- Quantity of the sample.
- Description of the sample.
- The specific lab analyses requested.

HAZARDOUS WASTE GENERATOR CATEGORY (STATUS) DETERMINATION

If the waste is determined to be hazardous, a monthly waste generator category determination must be made. A generator's category is based on the cumulative weight of hazardous waste generated each month and may change from month to month. Each generator category has different management requirements. The three hazardous waste generator categories are very small quantity hazardous waste generator (VSQG), small quantity hazardous waste generator (SQG), and large quantity hazardous waste generator (LQG). The lower the amount of hazardous waste a site generates, the less the amount of regulation the site will be required to meet.

A generator needs to have records to substantiate their generator status determination. A log showing when and how much hazardous waste was generated each month is the most practical method to verify the generator category determination. The following is an example of a log maintained on a container to document how much hazardous waste was generated monthly for a particular waste stream. The volume would need to be converted to pounds or kilograms and compared to the generator categories in Table 1 below, at the end of the month. If the site generates additional hazardous waste streams in other locations at the site, all hazardous waste generated across the entire site must be included when making the monthly generator category determination.

Date waste added:	How much added:	By:	Running total
1/3/06	1 gal	George G.	1 gallon
1/15/06	6 gal	Pat M.	7 gallons

A site may lower its hazardous waste generator category, thereby lowering their regulatory burden, if they implement [waste minimization](#) and [pollution prevention practices](#). They may also choose to handle certain hazardous wastes as [universal waste](#) to reduce their regulatory burden since the weight of universal waste is **not** included when calculating the monthly hazardous waste generator category.

As of the effective date of the revised Part 111 rules expected in spring of 2020, VSQGs and SQGs are allowed one episodic event in a calendar year (possibly two, if approved by EGLE) and the ability to stay at their existing generator category. This assumes that the generator follows the episodic event requirements for their individual category. See the [Very Small Quantity Hazardous Waste Generators](#) guidance and the [Small Quantity Hazardous Waste Generator](#) guidance to learn more about episodic events. When changing generator category, whether using the VSQG or SQG episodic event exclusion or not, notification must be provided to EGLE using the [Site](#)

[Identification Form](#) (EQP 5150) notification form. A generator may change their hazardous waste generator status throughout the year. If the monthly amount of hazardous waste generated varies substantially throughout the year, comply with the highest generator status requirements to ensure consistent compliance. The annual hazardous waste user charge for the site will always be based on the highest generator status observed during the calendar year from the preceding year, regardless of whether the category change was addressed as an episodic event or not. See Table 1 below for the generator categories.

TABLE 1: GENERATOR CATEGORIES BASED ON QUANTITY OF WASTE GENERATED IN A CALENDAR MONTH

Generator Type	Maximum amount of non-acute hazardous waste generated per month ¹	Approximate maximum volume of non-acute hazardous waste generated per month ²	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	Maximum amount of non-acute hazardous waste that can be accumulated on-site	Maximum time period before waste must be shipped
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	≤ 1,000 kilograms (2,200 lbs.)	No time limit unless amount exceeds 2,200 lbs.
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	≤ 6,000 kilograms (13,200 lbs.)	180 days, unless shipping over 200 miles, then 270 days
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	No maximum amount	90 days

If a listed hazardous waste is combined with other non-hazardous waste, generally the combined waste is regulated as listed hazardous. The mixing of hazardous waste in this example is known as the “[Mixture Rule](#)”. Only VSQGs may combine listed hazardous waste with other waste and have it remain excluded from hazardous waste regulations as long as it doesn’t exhibit a hazardous waste characteristic. Check with your disposal vendor before mixing any waste.

¹ This is the cumulative weight of hazardous waste generated across the entire site for all hazardous waste streams combined.

² The liquid volume is an estimate and assumes the hazardous waste has the same weight as water. The regulations require the actual weight of the waste be used when making the generator category determination.

WHEN MAKING THE GENERATOR CATEGORY DETERMINATION:

- Calculate the amount of hazardous waste generated in the calendar month, not the amount shipped.
- Calculate the amount of hazardous waste generated in pounds or kilograms.
- Determine the generator category for the hazardous waste using Table 1
- If acute or severely toxic hazardous waste and non-acute hazardous waste are generated in the same calendar month, count separately the total amount of acute hazardous waste, the total amount of severely toxic hazardous waste, and the total amount of non-acute hazardous waste generated in the calendar month and compare the amounts to the generator categories found in Table 1.
- Make sure all hazardous waste generated across the site has been characterized and a record of that determination is maintained and available for inspection.

WHEN CALCULATING THE MONTHLY GENERATOR CATEGORY, INCLUDE:

- All of the hazardous waste generated across the entire site.
- All hazardous waste treated and/or disposed on-site.
- All of the hazardous waste generated in the calendar month, not the amount shipped.

DO NOT INCLUDE:

- Hazardous waste managed as a universal waste in compliance with Rule 228 of the hazardous waste regulations (e.g. electric lamp, battery, pesticides, mercury containing devices, consumer electronics, pharmaceuticals, or antifreeze). As of the effective date of the revised Part 111 rules expected in spring of 2020, aerosol cans managed a universal waste can be excluded from the generator category determination as well.
- As of the effective date of the revised Part 111 rules expected in spring of 2020, hazardous waste managed as an episodic event in compliance with Rule 316 of the hazardous waste regulations.
- Liquid industrial by-products (e.g. most used oil, most antifreeze, non-hazardous wash waters, and fats oils and grease).
- Hazardous waste discharged directly to the sanitary sewer without any handling or storage in advance of discharge as authorized by the local sewer authority.
- Hazardous waste that is managed immediately upon generation in on-site elementary neutralization units, wastewater treatment units, or totally enclosed treatment facilities.
- Materials specifically managed to meet an exclusion from hazardous waste regulation such as hazardous secondary materials being recycled as specified in Rules 232, 233 and 234; solvent wipes managed in compliance with Rule 204; and characteristic commercial chemical products being recycled as specified in Rule 202.
- Spent lead acid batteries managed under Rule 804 of the hazardous waste regulations.
- Academic lab clean-out waste managed under Rule 313 of the hazardous waste regulations.

See the [Summary of Hazardous Waste Generator Accumulation Requirements](#) for an overview of the handling, recycling, and disposal requirements for the various hazardous waste generator categories.

Tables 2 and 3 below provide key information on the universal waste handler categories and liquid industrial by-products generators. Universal waste includes electric lamps (e.g. fluorescent, some light emitting diode, and other light bulbs), antifreeze, batteries, devices containing elemental mercury, consumer electronics, certain pesticides, and pharmaceuticals. As of the effective date of the revised Part 111 rules expected in spring of 2020, aerosol cans will also be a universal waste, If the large quantity handler (LQH) status is reached, the business must keep the LQH designation through the end of that calendar year.

TABLE 2: UNIVERSAL WASTE HANDLER SUMMARY

Handler Type	Amount of all universal waste accumulated at any time	Maximum amount that can be accumulated on-site	Maximum time period before waste must be shipped
Small Quantity Handlers (SQH)	< 5,000 kilograms (11,000 lbs.)	< 5,000 kilograms (11,000 lbs.)	1 year after generated or received from another site
Large Quantity Handlers (LQH)	≥ 5,000 kilograms (11,000 lbs.)	No maximum amount	1 year after generated or received from another site

Although there are no generator categories for liquid industrial by-products or solid waste, there may be local ordinances regarding frequency of waste pickup and/or privacy fencing requirements for dumpsters. Check with the landfill and waste hauler regarding what wastes they will accept and how they must be packaged or contained, especially for special solid wastes like [asbestos](#). Note, too, that there may be other regulations requiring containment and emergency planning for liquid industrial by-products under the [federal Spill Prevention Control and Countermeasure \(SPCC\)](#) regulations and [Michigan’s rules](#) designed to protect or water resources from the spillage of oil and other polluting materials”

TABLE 3: LIQUID INDUSTRIAL BY-PRODUCT GENERATOR SUMMARY (includes most used oil)

Generator Type	Amount generated in calendar month	Maximum amount that can be accumulated on-site	Maximum time period before waste must be shipped
Liquid Industrial By-products and Used Oil Generators	Any amount	No maximum amount	No state time limit as long as containers in good shape and closed, but check local ordinances

ADDITIONAL WASTE CHARACTERIZATION RESOURCES

- Michigan Guide to Environmental, Health, and Safety Regulations, Chapter 2 - [Michigan.gov/EHSGuide](#).
- Hazardous Waste and Liquid Industrial By-product Recorded Webinar Series available at [Michigan.gov/EGLEWaste](#) under the “Announcements” tab.
- U.S. EPA publication “[Guide for Industrial Waste Management](#),” Chapter 2.
- [RCRA Training Modules](#) including “[Hazardous Waste Identification](#)” and “[Exclusions](#)”.
- U.S. EPA [Definition of Solid Waste Web Page](#).
- Use Internet tools such as the [U.S. EPA Envirofacts Master Chemical Integrator](#) and SDS information to search for chemical and hazardous waste information. SDS can be obtained from the product supplier, manufacturer, or Internet such as the [SIRI SDS Index](#).
- Discuss waste characterization requirements with your [District Office](#) hazardous waste inspector.

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