

ELECTRONIC EQUIPMENT

What generators need to know about electronic waste



In recent years, electronic waste, more commonly known as “e-waste,” has rapidly grown in volume. It was not that long ago that computers were only available to large companies and would take up rooms of space. Now, they fit onto the desktops of nearly every home and business, take a variety of portable forms, and are rapidly replaced, due to ever changing technology. As electronic circuitry has become smaller, so have electronics, making electronics cheaper to manufacture, cheaper to buy, and more disposable.

Today nearly every household has a variety of electronic equipment, including computer processing units, computer monitors, televisions, laptops, video cassette recorders, digital video disc (DVD) players and recorders, cell phones, printers, computer mice, remote controls, telephones, video games, fax machines, printers, portable music, and video players, portable power tools, and more. Many of these items, although still functioning, quickly become obsolete because of technological advances and lower prices. This growth in the electronic market and their “disposability” has resulted in a disposal dilemma and the establishment of a patchwork of regulations to facilitate collection and recycling of the materials found in electronics. It has also left generators of e-wastes wondering how to properly manage their electronics when they are no longer of use. Given there are a number of international, national, state, and local regulations and initiatives that provide for safe management, recycling, and disposal of e-waste, the following provides a brief summary of the regulations that impact Michigan e-waste generators.

Handling e-waste properly is important because it contains a mixture of materials that can be problematic if released into the environment, materials like leaded glass, mercury switches, mercury bulbs, brominated flame retardant plastics, and electronic circuitry made of toxic metals like cadmium, chromium, and lead.

WASTE REGULATIONS 101

All generators of waste, except households, are responsible for **characterizing** their waste and determining if it is a hazardous waste.

A waste may be regulated as a hazardous waste if it is included on lists of specific wastes in the hazardous waste rules or if it exhibits one or more of four hazardous characteristics and is ignitable, corrosive, reactive, and/or toxic. Determining whether a waste is regulated hazardous waste can be done using knowledge of the waste, when appropriate, or by testing the waste. The regulations require the use of a test method called the Toxicity Characteristic Leaching Procedure

(TCLP) when evaluating whether a waste is a toxic hazardous waste. Historical e-waste testing performed by the U.S. Environmental Protection Agency (U.S. EPA) has shown that electronics are typically a toxic hazardous waste due to the toxic materials they contain. Therefore, most electronics are presumed a hazardous waste and are managed in accordance with the regulations that apply to non-households that generate e-waste.

To determine which regulations apply, the amount of hazardous waste generated on a monthly basis must be known because the handling requirements that apply differ based on the weight of hazardous waste generated each month. The following is a quick look at the three classifications of hazardous waste generators:

1. **Very Small Quantity Generator (VSQG)** - Generates less than a total of 220 pounds (100 kilograms) of non-acute hazardous waste per month, less than 2.2 pounds (1 kilogram) of acute hazardous waste per month, and never accumulates more than 2,200 pounds (1000 kilograms) at any one time.
2. **Small Quantity Generator (SQG)** - Generates between 220 and 2200 pounds (100 kilograms and 1000 kilograms) of non-acute hazardous waste per month, less than 2.2 pounds (1 kilogram) of acute hazardous waste per month, and never accumulates more than 13,200 pounds (6000 kilograms) of hazardous waste at any one time.
3. **Large Quantity Generator (LQG)** - Generates over 2200 pounds (1000 kilograms) of non-acute hazardous waste or 2.2 pounds (1 kilogram) or more of acute hazardous waste per month.

To learn more about the handling requirements for the different generator categories, see the [Summary of Hazardous Waste Generator Accumulation Requirements](#) guidance.

Businesses meeting the VSQG waste volumes and complying with the VSQG exemption from the hazardous waste regulations can lawfully dispose of their e-waste in a licensed solid waste landfill. However, the landfill must profile and approve of the waste. Most landfills have sustainability and safety precautions in place to divert electronics from being landfilled. As technology has advanced, so has the use of lithium-ion batteries. Lithium-ion batteries, which are found in many of our electronics, present a significant safety hazard when the battery casing is broken. When damaged, the contents can react with the air, auto ignite, and burn violently, starting other materials on fire. As such, they need to be handled carefully and recycled along with the e-waste.

Businesses meeting the SQG and LQG waste category limits are required to manage their e-wastes as hazardous wastes unless they possess and maintain waste characterization information demonstrating the e-waste does not contain hazardous constituents that would result in the waste being a toxic hazardous waste. To make it easier to recycle of e-waste subject to hazardous waste regulation, Michigan established consumer electronics as a universal waste type in 2004. This allows all non-households generating e-waste to manage unwanted consumer electronics under streamlined standards which are unique to Michigan. To learn more about the consumer electronics universal waste handling requirements, see the [Universal Waste](#) guidance.

IS IT A WASTE?

If e-waste is being recycled for its commodity value or it is being disposed, it is a waste subject to waste regulation. However, if electronic equipment still has value and will be reused in the same manner that it was upon original sale, it is not a waste. Many companies upgrade their electronic equipment relatively quickly and can sell or donate their usable equipment to charities, schools, or foundations for direct reuse or refurbishment and reuse. To demonstrate that equipment donated or sold for reuse is a product not subject to waste regulation, one should maintain sales receipts, sales contracts, and/or donation receipts that itemize the electronics sold or donated, their value, the parties in the transaction, and the date of the transaction.



THINK BEFORE YOU BUY

Before purchasing new electronics, investigate your options. Consider how you will recycle the electronic device at the end of its useful life. Also consider what you will do with any electronics being replaced by your purchase. Many large manufacturers now provide leasing or reverse distribution (takeback program) options for their customers to facilitate the collection and recycling of the materials in electronics. The freedom from having to find a recycler to destroy confidential information and the benefit of having confidence that your equipment is not being mishandled when you are through with it may be worth the cost of this service.

CHOOSING A RECYCLER

E-waste recycling options may differ for households and non-households. To find e-waste recycling options for households, search the following:

- [Michigan Recycling Directory](#)
- [Registered manufacturer e-waste takeback program list](#)
- [Registered e-waste recycler list](#)
- [Local recycling and household hazardous waste contact list](#)
- [CALL2RECYCLE](#), mail back program, for lithium-ion rechargeable batteries.

When purchasing your new electronic device, ask your retailer if they have a program to assist you with recycling your item.



To find e-waste recycling options for non-households, including commercial and industrial businesses, non-profits, municipalities, hospitals, churches, etc., search the following or consider working with a [waste consultant/vendor](#):

- [Recycled Materials Market Directory](#)
- [List of household hazardous waste collection companies](#)
- [Hazardous waste treatment, storage and disposal facility map](#)

RECYCLER QUALIFICATIONS

Make sure that the recycler you choose has the qualifications you desire since you may be liable for any mismanagement of waste you generate, and you want to make sure your personal information is secure. Some recommendations include:

- ✓ Ask about security and data destruction.
- ✓ Ask about the recycler's compliance record.
- ✓ Ask about any national certifications programs that the facility has achieved.
- ✓ Review compliance information (see more information below).
- ✓ Ask about ultimate management of materials (such as how are they managed and where do they go).
- ✓ Visit the facility.
- ✓ Seek and contact references.
- ✓ Ask about other environmental registrations or licensing they possess.

Michigan's [Part 173](#) e-waste takeback law requires recyclers to maintain a documented environmental, health, and safety management system that may be audited and is compliant with or equivalent to ISO 14001. EGLE considers national certification programs such as [R2](#), [E-Stewards](#), and [RIOS](#) to be essentially equivalent to ISO 14001.

REVIEWING COMPLIANCE

Facilities recycling household and VSQG e-waste in Michigan, including collecting and storing e-waste prior to recycling, must meet Michigan's solid waste diversion center requirements found under Section 11521b of Michigan's [solid waste regulations](#). The e-waste cannot be speculatively accumulated, which means at least 75 percent of the incoming e-waste must be recycled or sent for recycling to another recycler within a year. For questions about recycling and/or diverting household and VSQG e-waste under the solid waste regulations, review Section 11521b of the law and contact your local EGLE [District Office](#) solid waste program staff. If the exemption is not met, the activity must be permitted and licensed under the [solid waste regulations](#).

To determine if a recycler is exempt or permitted and licensed, please contact Steve Noble at NobleS4@Michigan.gov or 517-449-6153. To review compliance information for a recycler on-line, go to Michigan.gov/EGLEWaste, select the “**Waste Data System**” button, and enter site specific information or contact your EGLE **District Office** solid waste program staff.

Facilities managing SQG and LQG e-waste in Michigan must manage e-waste in accordance with the waste classification assigned by the generator: as a universal waste or a hazardous waste. If a SQG or LQG manages e-waste as a universal waste, the facility accepting the e-waste for recycling, including collection or storage of the e-waste prior to recycling, must:

1. Meet the universal waste handler definition and the universal waste handling requirements found under the hazardous waste regulations;
2. Meet **Part 111** exemption requirements from hazardous waste permitting and licensing if processing e-waste (such as cathode ray tubes being recycled per Rule 231 or shredding of circuit boards per Rule 204(1)(q) and Rule 206(1)(b) and be notified as a universal waste destination facility authorized to accept the hazardous waste); or
3. Be a licensed hazardous waste treatment, storage, or disposal facility, and be notified as a destination facility authorized to accept the hazardous waste.

If a SQG or LQG manages the e-waste as a hazardous waste, the e-waste must be shipped using a hazardous waste manifest and transported using an Act 138 permitted and registered hazardous waste transporter. To determine if a Michigan facility has notified as a universal waste handler, destination facility, and/or possesses a license to treat and/or store your e-waste, go to Michigan.gov/EGLEWaste, select the “**Waste Data System**” button, and enter site specific information, or contact your EGLE **District Office** hazardous waste program staff.

To review facilities located outside of Michigan, see the U.S. EPA Environmental Compliance History Online available at <https://echo.epa.gov>. For information on Michigan Act 138 permitted and registered hazardous waste transporters, go Michigan.gov/EGLEWaste, select the “Transporters” button, and then “**Participating Transporters.**”

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