



Electronic Equipment

What Do Generators Need to Know About Electronic Waste?



Electronic waste, more commonly known as “e-waste,” is rapidly growing in volume. In years past, 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 from laptops to notebooks, and are rapidly replaced. Today’s [computers are made of a mixture of materials](#) that can be problematic if released into the environment such as leaded glass, mercury switches, mercury bulbs, brominated flame retardant plastics, and electronic circuitry made of cadmium, chromium, and lead.

As electronic circuitry has become smaller, so have electronics, making electronics cheaper to manufacture, cheaper to buy, more prevalent, 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, 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.

WASTE 101

All generators of waste, except households, are responsible for determining if their waste is a hazardous waste. A waste may be regulated as a hazardous waste for disposal if it is included on a list of specific wastes known to be hazardous or if the waste exhibits one or more of four hazardous characteristics: ignitable, corrosive, reactive, and/or toxic. Determining whether a waste is listed hazardous and/or exhibits hazardous characteristics can be done using knowledge of the waste, when appropriate, or by testing the waste. To evaluate whether a waste is toxic, hazardous waste regulations require the use of a test method called the Toxicity Characteristic Leaching Procedure (TCLP) for analyzing a representative sample of the waste. Historical testing and analysis by U.S. EPA of electronic equipment in use has shown that these materials typically are hazardous waste. Therefore, most businesses assume their electronics are hazardous waste due to the toxic metals normally found in them and manage the electronics in accordance with the regulations that apply to their business.



To determine which regulations apply, a business must know the amount of hazardous waste generated on a monthly basis, and follow the requirements that apply based on the volume of hazardous waste generated monthly. The following is a quick look at the three classifications of hazardous waste generators:

1. **Conditionally Exempt Small Quantity Generator (CESQG)** - 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.

Businesses meeting the CESQG waste volumes and complying with the CESQG exemption from the hazardous waste regulations can dispose of their e-waste in a non-hazardous solid waste landfill authorized under [Part 115](#), Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA), as amended. Liquid wastes must still be disposed in accordance with the liquid industrial waste regulations under [Part 121](#), Liquid Industrial Waste, of the NREPA. However, the Department of Environmental Quality recommends that CESQG e-wastes, like household e-wastes, be recycled.

Businesses meeting the SQG and LQG waste volumes are required to manage e-wastes as regulated hazardous wastes unless they possess and maintain waste characterization information demonstrating the e-wastes do not contain hazardous materials. To facilitate recycling, in 2004, Michigan modified its hazardous waste rules to allow e-wastes subject to hazardous waste regulation to be managed under streamlined management standards, called universal waste standards. As such, SQGs and LQGs may elect to manage e-wastes under the more relaxed universal waste standards established to facilitate e-waste recycling in Michigan.

For more detailed information on the regulations that apply to specific waste types, including [universal wastes](#), or generators of hazardous waste, please see the DEQ generator guidance found at <http://www.michigan.gov/deqwaste> under the “Hazardous and Liquid Industrial Waste,” “Hazardous and Liquid Industrial Waste Management,” and “[Generators](#)” or “[Disposal of Hazardous and Liquid Industrial Waste Types](#)” hyperlinks.

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 for reuse. To demonstrate equipment donated or sold for reuse is a product not subject to waste regulation, 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 you are purchasing at the end of its useful life. Also consider how you will recycle or dispose of 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

A consumer can get information on recycling electronic equipment in several ways:

- By April 1, 2010, manufacturers selling new computers and televisions in Michigan are required to register with the DEQ and have a free takeback program for collecting TVs and computers from households and businesses with 10 or fewer employees. They are also required to provide consumers with information on how and where to return their e-wastes for recycling. This must include information on the manufacturer's collection, recycling, and reuse program and the manufacturer's Web site. The manufacturer may also include this information in the packaging or in other materials that accompany the equipment when it is sold or the manufacturer may provide that information through a toll-free telephone number.
- Beginning October 2009, the DEQ will maintain a list of registered manufacturers and links to each manufacturer Web page providing details on where covered electronic equipment can be recycled. The list is/will be available at www.michigan.gov/deqwaste under the link titled "Electronic Waste Takeback Program."
- For households and small businesses with electronic equipment not covered by a manufacturer takeback program, there may be retailer and/or community collection programs available at little or no cost. To find out more about community collections, please see www.michigan.gov/deqrecycling and www.michigan.gov/deqreswastecontacts. To find out more about retail sponsored programs, please see www.michigan.gov/deqwaste.
- For businesses generating e-waste, see the Michigan Recycled Materials Market Directory at www.michigan.gov/deqrmmd and review the list of e-waste recyclers in the "Miscellaneous" section of the directory.
- For U.S. EPA e-waste recycling resources go to http://waste.custhelp.com/cgi-bin/waste.cfg/php/enduser/std_adp.php?p_faqid=1862&p_created=1108562540.
- For general recycling resources, go to www.michigan.gov/deqrecycling, check with local recycling programs at www.michigan.gov/deqreswastecontacts, or review the information provided by on-line recycling search engines like Earth 911 at <http://earth911.com/> or RecyclesTrade at <http://www.recyclestrade.com/search.htm>.

Make sure that the recycler you choose has the qualifications you desire since you may be liable for any [mismanagment](#) of waste you generate. Some recommendations include:

- ask about security and data destruction,
- ask about the recyclers compliance record,
- 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, and
- ask about other environmental certification or registrations the company might have.

REVIEWING COMPLIANCE

Facilities recycling household and CESQG e-waste in Michigan, including collecting and storing e-waste prior to recycling, must:

- 1) meet the Part 115 Michigan Electronic Waste Exemption found on-line at www.michigan.gov/deqwaste, under the links titled “Solid Waste” and “Exemptions and Guidance,” or
- 2) be permitted and licensed under [Part 115](#), Solid Waste Management, of the NREPA.

To determine if a facility is notified under the Michigan Electronic Waste Exemption or ask questions about the notification, please contact Duane Roskoskey at 517-335-4712. To review compliance information for a recycler on-line select, “[Online Services](#)” from any of the DEQ web pages, select the “[Waste Data System](#),” and enter site specific information or contact your [DEQ, Waste and Hazardous Materials Division, district office](#).

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 [Part 111](#);
- 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 notified as a universal waste destination facility authorized to accept the hazardous waste; or
- 3) be permitted and licensed under Part 111, Hazardous Waste Management, of the NREPA or the federal Resource Conservation and Recovery Act and 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 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, review the information found on DEQ web pages under “[Online Services](#)” and the “[Waste Data System](#)” for the facility you are reviewing or contact your [DEQ, Waste and Hazardous Materials Division, district office](#). To review facilities located outside of Michigan, the U.S. EPA Environmental Compliance History Online available at www.epa-echo.gov/echo/ and the EPA State Resource Locator available at <http://www.envcap.org/statetools/index.cfm> may be good resources. For information on Michigan Act 138 permitted and registered hazardous waste transporters, please go to <http://www.michigan.gov/deqwaste>, select “Hazardous and Liquid Industrial Waste Transporters,” and then “[Participating Transporters](#).”

For questions regarding information in this publication, please contact the Environmental Assistance Program at 1-800-662-9278 or deq-ead-env-assist@michigan.gov, or your [DEQ, Waste and Hazardous Materials Division, district office](#).

