



Electronic Waste Management

Division of Waste and Hazardous Substances, Compliance and Permitting Section

Electronic Waste (e-waste)

Electronic waste (e-waste) is electronic equipment and components that are destined for storage, disposal or recycling. E-waste is usually electronics that incorporate a printed circuit board in their assembly. Typical e-waste generated by sites includes, but is not limited to:

- Barcode Scanners
- Cathode Ray Tubes (CRTs)
- Cell phones/Telephones
- Computers
 - Printed Circuit Boards (PCBs)
 - Peripherals:
 - Monitors (CRT, LCD, LED)
 - Keyboards
 - Mice
 - Headphones
- Printers/Copiers/Fax Machines/Scanners
- Projectors
- Tablets
- Two-way radios

The Compliance and Permitting Section (CAPS), encourages that when possible, e-waste generators should recycle their waste with an electronics recycler or send the waste to a reverse logistics center. Should a generator desire, CRTs have specific hazardous waste exclusions (§261.4(b)(16)) which allow for generators to manage these e-wastes as non-hazardous waste should they not desire to ship the entire electronic device off-site, intact to a e-waste recycler or reverse logistics center.

Generators who are sending their e-waste to a recycler or reverse logistics center should treat the e-waste as if it has value and accumulate the e-waste in a manner that prevents releases to the environment (e.g., stored in sturdy containers, wrapped in plastic atop a pallet). Should e-waste become broken or damaged in a manner that causes releases to the environment, the generator would potentially void the exclusions, subject the e-waste to full hazardous waste regulation, and be required to address the release of the waste to the environment.

If a site chooses to dispose of their e-waste in lieu of recycling or shipping to a reverse logistics center,

then they must make an accurate determination, explained in Delaware's *Regulations Governing Hazardous Waste* (DRGHW) §262.11, as to whether that waste is a hazardous waste. If the waste is determined hazardous then all hazardous waste regulations for the sites' generator category apply. For more information visit the [Basic Business Guide for Hazardous Waste Management](#) fact sheet.

Managing Printed Circuit Board Waste

PCBs commonly have heavy metal components, as well as batteries and mercury switches; these components are routinely determined to be toxic hazardous waste. As there are many types of circuit boards don't assume one hazardous waste determination is regulatory compliant for all waste. Different manufacturers or models may contain different components and may require separate hazardous waste determinations based on your site's final management selection (i.e. disposal or recycling).

Intact circuit boards sent for recycling meet the scrap metal exemption §261.4(a)(13), which allows used whole circuit boards being recycled, to be shipped without becoming subject to DRGHW.

Shredded circuit boards are covered under the exclusion for shredded circuit boards being recycled found in §261.4(a)(14). To meet this exclusion, the shredded boards must be:

- Stored in containers sufficient to prevent a release to the environment; and,
- Free of mercury switches, mercury relays, nickel-cadmium batteries and lithium batteries.
 - Once removed, batteries and mercury switches are considered a new waste stream and must be managed as universal waste or hazardous waste. For more information on universal waste please see the [Universal Waste Management](#) fact sheet.

Generators should be aware that mercury devices and batteries may be very small and may escape visual inspection. Therefore, it may be easier to send

the entire electronic component to a recycler, rather than first disassembling and shredding.

Of course, the option remains to demonstrate through Toxicity Characteristic Leaching Procedure (TCLP) analysis that circuit boards are not hazardous. When so demonstrated, non-hazardous circuit boards may be disposed of in a permitted solid waste landfill operated by the Delaware Solid Waste Authority (DSWA), or you may have your hazardous waste hauler collect the waste. If your site elects to dispose of non-hazardous circuit boards in a Delaware landfill, the DSWA must grant written approval prior to disposal. To obtain approval you must contact the DSWA at 302-739-5361.

Managing Cathode Ray Tube Waste

Older computer monitors and televisions use a glass CRT for viewing. The CRT glass contains lead to shield users from the radioactivity generated to produce images. Improper disposal of CRTs can place lead in the municipal solid waste stream, which represents an environmental health hazard.

Provided conditions in §261.4(b)(16) are met, both used, intact and broken CRTs sent for recycling, are solid wastes that are excluded from regulation as hazardous waste.

For used, intact CRTs, a generator must:

- Store the CRTs in a building or in a closed container in good condition under a roof and on an impervious base;
- Label the containers “Used cathode ray tube(s)-contains leaded glass”;
- Accumulate the CRTs for no longer than one year, and demonstrate the length of time each CRT is accumulated from the date it is first taken out of service.

For used, broken CRTs, a generator must:

- Store the CRTs in a closed container in good condition under a roof and on an impervious base;
- Label the containers “Used cathode ray tube(s)-contains leaded glass” or “Leaded glass from televisions or computers.” It must also be labeled “Do not mix with other glass materials”;
- Demonstrate the length of time each CRT is accumulated from the date it is first taken out of service. Not the date when the glass became broken (if that occurred later).

Becoming a CRT Collector or Processor

Please contact the CAPS at 302-739-9403 for more information regarding the requirements for CRT collectors and processors.

Available E-waste Recycling Resources

Businesses are not eligible to utilize DSWA’s electronic goods recycling program, as the program is only available for schools, non-profit organizations and government agencies. Eligible participants may schedule a non-fee electronics pick up by contacting DSWA at 1-800-404-7080.

All entities not eligible for the DSWA recycling program must schedule electronics waste pick up from an electronics recycling company. DSWA recommends businesses to employ the services of ECOvanta, a company based out of Philadelphia, PA; however, a site may utilize any company providing legitimate recycling or reverse logistics services. For more information about ECOvanta, visit covanta.com/how-we-can-help/solutions/electronic-waste-recycling.

To locate your nearest electronics recycler please visit e-stewards.org.

This fact sheet is a summary provided as a courtesy to businesses. It is not intended as a substitute for 7 DE Admin. Code 1302, Delaware’s *Regulations Governing Hazardous Waste* (DRGHW), Parts 260-266, 268, 273 and 279.

regulations.delaware.gov/AdminCode/title7/1000/1300/1302/



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