

Frequently Asked Questions: Regulation of Used Cathode Ray Tubes (CRTs) and CRT Glass

1. How does U.S. EPA regulate recycling of used CRTs and CRT glass under the RCRA hazardous waste regulations?

Under the CRT exclusion (also known as the “CRT rule”), used CRTs and CRT glass being recycled that meet the requirements of the exclusion are conditionally excluded from the hazardous waste regulations. As long as the used CRTs and CRT glass meet the requirements of this exclusion, they are not considered a solid or hazardous waste under the Resource Conservation and Recovery Act (RCRA). **(40 CFR 261.4(a)(22))**

Please note that the CRT exclusion applies only in RCRA-authorized states that have adopted the exclusion and states where EPA administers the RCRA program. In addition, state agencies may have more stringent requirements than the federal government, so it is important to also check your specific state regulations. Links to the state waste programs can be found at <http://www.epa.gov/wastes/wyl/stateprograms.htm>. Facilities handling CRTs also may be subject to other federal and state laws and regulations, including those covering worker safety and transportation.

2. Which materials are covered by the CRT exclusion?

The CRT exclusion covers three different types of CRT materials:

- **Used, intact CRTs** - CRTs whose vacuum has not been released.
- **Used, broken CRTs** - CRT glass removed from the CRT housing or casing whose vacuum has been released. This category includes unprocessed CRT glass.
- **Processed CRT glass** – CRT glass that has been sorted in preparation for recycling.

Under the CRT exclusion, different requirements apply to different categories of CRT materials.

3. What export requirements apply to CRTs and CRT glass?

Used, intact CRTs sent for reuse, are subject to a one-time export notification. **(40 CFR 261.41)** Exporters must send the notification to the appropriate EPA Regional Administrator to inform the EPA Regional Office that they intend to export intact CRTs for reuse, and must provide contact information and a statement that they are exporting the CRTs for reuse. The exporters must keep copies of normal business records demonstrating that each shipment of exported CRTs will be reused. Exporters must retain records for three years.

Used CRTs (either intact or broken) exported for recycling are subject to export notice and consent requirements. (**40 CFR 261.40** and **40 CFR 261.39(a)(5)** respectively) Exporters must send the export notice to EPA at least 60 days prior to export. The notice may cover exports occurring during a 12-month or shorter period, and must include address and contact information about the exporter and foreign recycler, a description of the recycling, the planned frequency of export shipments, means of transport, total quantity of CRTs proposed to be shipped over the export period, and information about any transit countries. Exporters shipping used CRTs for recycling under the CRT exclusion are prohibited from shipping until they have received an EPA Acknowledgement of Consent (AOC) letter documenting the consent EPA has received from the country of import and any transit countries. A copy of the AOC letter must accompany each export shipment. If a shipment cannot be delivered to the recycler listed in the notice for any reason, the exporter must notify EPA of the need to change the destination recycler and obtain consent prior to shipping to a different recycler.

Processed CRT glass exported for CRT glass making or lead smelting is not subject to export requirements of the CRT exclusion. CRT glass destined for export must still, however, meet the requirements for processed CRT glass in 40 CFR 261.39(c). Specifically, under the CRT exclusion the generator must be able to demonstrate that the exported CRT glass is being used for CRT glass making or lead smelting and not disposed in the receiving country, and that it is not being speculatively accumulated prior to being exported.

Processed CRT glass excluded under a different solid waste exclusion (for example, CRTs being used as an effective substitute as a fluxing agent at a copper smelter) are not subject to hazardous waste export requirements. (See **FAQ #9** for a discussion of permissible final uses for CRT processed glass). However, generators claiming a solid waste exclusion must be able to demonstrate that their CRT glass meets the terms of the exclusion. (**40 CFR 261.2(f)**)

4. What other requirements apply to CRTs and CRT glass?

Used, intact CRTs are conditionally excluded from hazardous waste regulation within the United States as long as they are not disposed or speculatively accumulated (i.e., accumulated with no assurance that they will actually be reused or recycled; see **FAQs #5 through #7** for more information on speculative accumulation). (**40 CFR 261.4(a)(22)(i)**)

Used, broken CRTs are conditionally excluded from hazardous waste regulation within the United States if they are (1) stored in a building with a roof, floor and walls; or placed in an container that meets the regulatory requirements, (2) labeled according to the regulatory requirements, (3) transported in a container that meets the regulatory requirements, (4) not speculatively accumulated, (5) processed only in a building with roof, floor and walls, and (6) do not undergo activities that use temperatures high enough to volatilize lead from CRTs (**40 CFR 261.39(a) and (b)**).

Processed CRT glass is conditionally excluded from hazardous waste regulation under the CRT exclusion so long as (1) it is sent for recycling at a CRT glass manufacturer or a lead smelter, and (2) it is not speculatively accumulated. **(40 CFR 261.39(c))**

5. How are CRTs and CRT glass shown not to be speculatively accumulated?

CRTs and CRT glass are not speculatively accumulated if (1) there is a feasible means of recycling the CRTs or CRT glass, and (2) at least 75% of each CRT material is either recycled or transferred for recycling during the calendar year. **(40 CFR 261.1(c)(8))**

6. How is the minimum requirement of 75% material recycled in one year calculated?

The minimum requirement of 75% material recycled applies to each material of the same type, can be calculated either by weight or by volume, and is based on the total inventory of that material accumulated for recycling as of January 1. For example, a company with a total of 100 tons of CRT glass stockpiled for recycling on January 1st must recycle, or transfer for recycling, at least 75 tons of CRT glass before the end of the calendar year.

7. What about the remaining 25%?

CRTs or CRT glass that are not recycled during the calendar year count towards the total inventory for the purpose of speculative accumulation calculations for the following calendar year.

8. Does CRT glass that has been cleaned and sorted still have to follow the speculative accumulation limits?

Yes. Processed CRT glass that contains enough lead for it to exhibit the hazardous waste characteristic is subject to the limits on speculative accumulation. **(40 CFR 261.2(c)(4), 40 CFR 261.2(e)(2)(iii) and 40 CFR 261.39(c))**

9. What are permissible final uses for processed CRT glass?

The CRT exclusion only applies to processed CRT glass sent for recycling at a CRT glass manufacturer or a lead smelter. **(40 CFR 261.39(c))**

In some cases, under a different exclusion, processed CRT glass may be used as an ingredient in an industrial process to make a product, provided that the materials are not being reclaimed, or it may be used as an effective substitute for a commercial product. **(40 CFR 261.2(e)(1)(i) and (ii))** For example, CRT glass may be used as an effective substitute for a fluxing agent at copper smelters. A company may wish to consult their state regulatory authority to help determine if the final use for their CRT glass would fit the requirements of this exclusion.

However, when CRTs or CRT glass are used in a manner constituting disposal (i.e., used in a manner that results in the product utilizing them being applied or placed into or onto the land), then the “use constituting disposal” (UCD) regulations apply. **(40 CFR 261.2(e)(2)(i) and 40 CFR 261.39(a)(4) and (d))** The UCD regulations require the hazardous material to be bound into the new product (i.e., inseparable by physical means) and must meet hazardous waste treatment standards for each hazardous constituent present (e.g., lead, cadmium, chromium, etc.). **(40 CFR 266.20)**

10. What about used CRTs or CRT glass from households, or from businesses that generate less than 100 kg of hazardous waste per month?

Used CRTs discarded by households are considered “household hazardous waste” and are exempt from hazardous waste regulations. **(40 CFR 261.4(b)(1))** CRTs discarded by businesses that generate less than 100 kg (220 lbs) of (non-acute) hazardous waste per month are considered “conditionally exempt small quantity generator” (CESQG) wastes and are subject to reduced hazardous waste requirements. **(40 CFR 261.5)**

However, these exemptions only apply if the exempted material is kept separate from the regulated CRT materials. If non-household or non-CESQG used CRTs or CRT glass is mixed with the exempt materials, then the entire comingled pile would be subject to the CRT exclusion requirements or the hazardous waste regulations.

Moreover, CRTs and CRT glass collected from households or CESQG businesses are subject to the general prohibition on open dumps **(40 CFR part 257)** and may become subject to RCRA, Superfund, or State clean-up authorities if mismanaged.

11. If the CRT glass is accumulated in a building, does that eliminate any clean-up liability?

Managing the CRT glass piles in a building reduces liability by preventing potential lead contamination of the environment, which can be costly to clean up. However, if the indoor CRT glass pile becomes abandoned (for example, if the recycler goes out of business), businesses or facility owners/operators may become liable for the removal and proper management of the glass under RCRA, Superfund, or State clean-up authorities for both the recycler and for those who arranged for the CRT glass to go to the recycler.

12. How can I make sure that the recycler is properly managing the CRTs and CRT glass I send there?

Before you send your CRTs or CRT glass to a recycler, it is a good idea to take steps to verify they are an environmentally responsible recycler. Information that can help you decide whether a recycler will responsibly recycle hazardous secondary materials (including CRTs) include whether

the recycler can provide records for the final recycling of their hazardous secondary materials and can document that environmental, health, and safety management systems are in place to ensure environmentally sound management practices. For more information, see EPA's *Choosing a Responsible Recycler: A Guide for Generators of Hazardous Secondary Materials* (EPA530-F-09-018). <http://www.epa.gov/osw/hazard/recycling/pubs/responsible-recycler.pdf>

In addition, there is a range of tools specific to used electronics to help ensure they are recycled in an environmentally sound manner, including accredited third-party certification programs, best practices, and increased knowledge and transparency of the companies and practices along the recycling chain. Currently, there are two voluntary programs run by independent organizations that certify electronics recyclers: [R2](#) and [e-Stewards](#). (*References to specific certification websites is for informational purposes only and is not a reflection of EPA endorsement*).

13. The recycler where I was planning on sending my used CRTs or CRT glass is no longer accepting them. What can I do now?

If circumstances prevent you from recycling 75% of your used CRTs or CRT glass inventory before the calendar year, but you will be able to recycle a sufficient amount the following calendar year, you may apply for a variance from the speculative accumulation prohibition using the provisions found at **40 CFR 260.31(a)**. Variances are granted on a case-by-case basis by the authorized state; please contact your state environmental agency for more information.

Otherwise, you may also manage your used CRTs or leaded CRT glass as hazardous waste and send it for proper treatment and disposal in a RCRA hazardous waste permitted facility. CRT materials that are managed as hazardous waste do not count towards speculative accumulation limits, but would count towards the monthly total used to determine a facility's hazardous waste generator status per **261.5(c) and (d)** and, unless CESQG, must meet the applicable hazardous waste requirements in **40 CFR part 262**.

14. Who should I contact if I need help complying with the CRT exclusion?

If you have questions about your specific circumstances, you should contact your state environmental agency. Links to the state waste programs can be found at <http://www.epa.gov/wastes/wyl/stateprograms.htm>.

For more information on the federal regulation of CRTs, please contact Tracy Atagi at 703-308-8672 or atagi.tracy@epa.gov or Amanda Kohler at 703-347-8975 or kohler.amanda@epa.gov.