

Cathode Ray Tube (CRT) Regulations and Stockpiles

NEWMOA WEBINAR
June 24, 2014

Agenda

- Federal Regulation of CRTs
- Proposed Changes to the Export Provisions for CRTs
- Overview of the CRT Stockpile Issue

Federal Regulation of CRTs

- Under RCRA, CRTs are hazardous waste when disposed due to the presence of lead (each CRT contains at least four pounds of lead).
- CRT glass is typically sorted into two categories – panel glass (which generally does not fail the TCLP and is thus not hazardous waste) and funnel glass (which generally does fail the TCLP).
- In 2006, EPA excluded CRTs and CRT glass sent for recycling from solid and hazardous waste regulation to encourage recycling of these materials. (40 CFR 261.4(a)(22))
- Currently, CRT glass can be recycled in two ways under EPA's regulations – sent to a lead smelter (to reclaim the lead and to use the silica as a flux agent) and to a CRT glass manufacturer.
- CRTs that are household hazardous waste are not subject to the RCRA hazardous waste regulation provided they remain separate and are not commingled with CRTs from non-households. Many scrap recyclers, however, do commingle the streams and manage all CRTs as excluded hazardous wastes under the CRT rule.

Federal Regulation of CRTs

Three categories of CRTs:

- (1) Used, intact CRTs are excluded as long as they aren't disposed or speculatively accumulated, meaning there must be a feasible means of recycling and at least 75% of the material is recycled or transferred for recycling during the calendar year. Export conditions also apply.
- (2) Used, broken CRTs must meet storage and management requirements (e.g., stored in a building with a roof, floor, and walls, labeling, speculative accumulation, and can't undergo activities that use temperatures high enough to volatilize lead). Export conditions also apply.
- (3) Processed CRT glass is excluded from hazardous waste regulation if it is sent for recycling to a CRT glass manufacturer or a lead smelter and is not speculatively accumulated.

Existing CRT Export Regulations

- Used, intact CRTs exported for reuse, are subject to a one-time export notification. Notice includes contact information and a statement that they are exporting the CRTs for reuse. Must keep copies of normal business records demonstrating that each shipment of exported CRTs will be reused.
- Used CRTs (either intact or broken) exported for recycling are subject to export notice and consent requirements. 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.
- Processed CRT glass exported for CRT glass making or lead smelting is not subject to export requirements of the CRT exclusion.

Proposed Changes to CRT Export Provisions

In March 2012, EPA proposed the following changes to the export provisions of the CRT rule:

1. Add a definition of “CRT exporter” to eliminate potential confusion over who is responsible for fulfilling CRT exporter duties, including submitting the export notices.
2. Require information on additional recyclers in the notice for CRTs exported for recycling to provide more complete information to receiving countries.
3. Require annual reports from exporters of used CRTs sent for recycling to provide EPA more accurate information on the total quantity of CRTs exported for recycling during a calendar year.

Proposed Changes to CRT Export Provisions

4. Replace the one-time notice for used CRTs exported for reuse with an expanded, periodic notice to improve tracking, and thus better management, of these CRTs.
 5. EPA also requested comment on adding other requirements for used CRTs exported for reuse, such as English translation of business records.
- EPA received five sets of comments from Institute of Scrap Recycling Industries, Inc. (ISRI); Consumer Electronics Association (CEA) and Consumer Electronics Retailers Coalition (CERC); Tennessee Valley Authority (TVA); Basel Action Network (BAN); and Waste Management.
 - Final Rule expected summer 2014.

The CRT Stockpile Issue

There exists tremendous pressure to recycle, rather than dispose, CRTs:

- CRTs and CRT glass that are recycled are not subject to hazardous waste regulation.
- 25 states have mandatory e-recycling laws
- 19 states ban electronics from landfills (both municipal and hazardous waste landfills).
- The two independent, third-party electronic certification programs (R2 and e-Stewards) strongly discourage electronics (including CRTs) going to landfills.
- GSA has proposed to ban landfilling of federal government electronic waste. (Proposed rule issued; comments were due May 5th.)

The CRT Stockpile Issue

- CRTs and CRT glass were once easily recycled into new CRTs; however, the demand for new CRTs has collapsed in favor of new flat panel technologies.
- Currently, there is only one CRT manufacturer left in the world – Videocon in India.
- Additionally, only three lead smelters in North America currently accept CRT glass and these smelters have limits on the quantity of CRT glass they will accept and process.
- Consequently, CRT glass has lost a lot of economic value.

The CRT Stockpile Issue

- Because of rising costs and lack of economically feasible options, CRT processors and recyclers are choosing to store the glass indefinitely rather than send it for recycling.
- This is illegal under the CRT rule, which requires compliance with speculative accumulation. 75% of used CRTs and CRT glass must be recycled or transferred offsite for recycling within a calendar year.
- TransparentPlanet's December 2012 report estimates that about 330,000 tons were being stockpiled. Furthermore, an estimated 3.2 to 6.6 million tons of CRTs have yet to be collected. One electronics recycler estimates that the cost to recycle CRTs will reach over two billion dollars in the next decade.

CRT Damage Cases

- 2013 (PA, NY) – eco International abandoned 12,000 tons of CRT glass.
- Aug 2013 (CO) – Luminous Recycling abandoned 8,000 tons of CRT glass.
- Aug 2013 (AZ) - Dow Management abandoned 3,000 tons of CRTs and CRT glass.
- Mar 2014 (OH) - 2TRG abandoned 1,500-3,000 tons of CRT glass. 2TRG was both R2 and e-Stewards certified.
- Mar 2014 (AZ) – Dlubak Glass was fined \$120,000 for improper storage and recycling of CRTs. Soil stains were detected, with lead levels as much as 75 times more than the maximum federal and state exceedance level of five milligrams per liter.
- Mar 2014 (UT) – Fire occurred at Stone Castle Recycling, which may have been ignited from storing CRTs outside where reflection from the sun could ignite a blaze.
- Additionally, a number of attendees on EPA's May 2013 webinar indicated they knew of stockpiles, including ones in Pennsylvania, North Carolina, and Florida.

Ohio EPA pictures of 2TRG



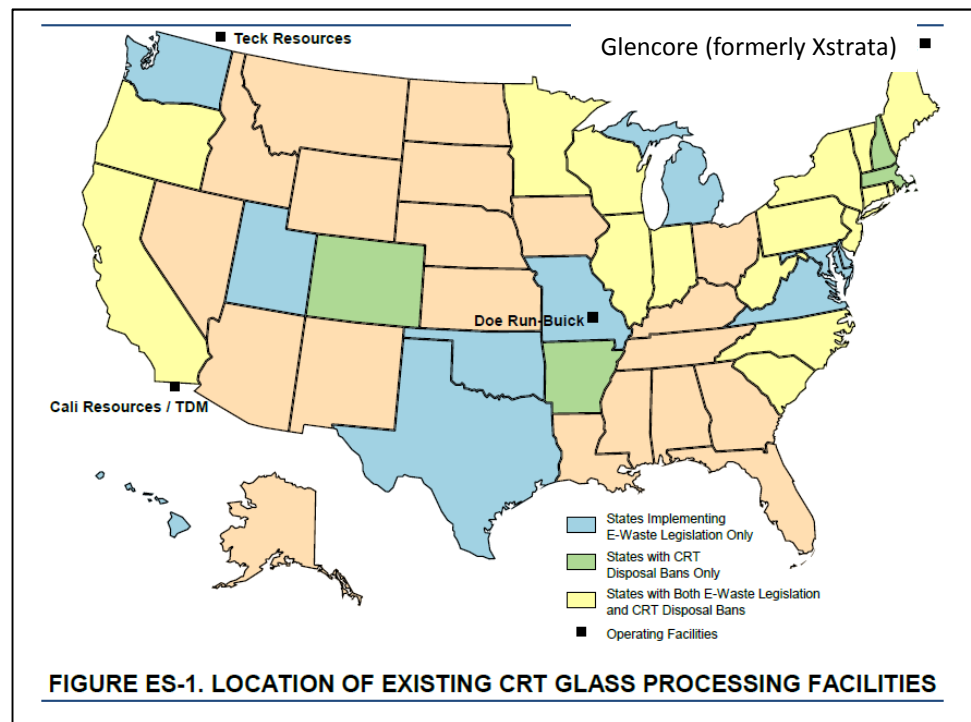
Existing Technologies

Under the CRT final rule, CRT glass recycled at lead smelters and CRT glass manufacturers is excluded from RCRA hazardous waste regulation.

- Teck, Glencore, and Doe Run (lead smelters)
- Technologies Display Mexicana (TDM) sending glass to Videocon (CRT glass manufacturing)

Challenges:

- Limited threshold for lead smelters; no new customers accepted.
- Limited time horizon for CRT glass manufacturing.



Emerging Technologies

- Glass furnaces, which use heat generated by electricity or plasma, to reclaim lead from CRT glass. The two end products would be lead ingots and silica.
- CRT glass used as an ingredient in ceramics or concrete-making.
- CRT glass treated and used as alternative daily cover in municipal solid waste landfills.

Other Options

- Copper Smelters – EPA letter to Sony clarified that CRT glass can be used as a fluxing agent in copper smelters under use/reuse exclusion. However, we have not verified this is happening.
- Hazardous waste disposal – CRT glass can be treated to meet LDR standards and be disposed in a hazardous waste landfill. However, this is expensive and could not be used in states with landfill bans.
- Long-term storage – Some stakeholders are exploring whether CRT glass can be stored in a permitted containment building or geologic reservoir for potential recovery in the future.

EPA Actions Taken to Date

- Over the last year, we have met with a number of stakeholders on this issue, including states, Consumer Electronics Association, and individual electronic manufacturers and recyclers.
- We held a public webinar last May, inviting comments from industry, states, and the environmental community.
- We are also providing regulatory support to stakeholders exploring options for recycling CRT glass. This includes our April 2013 letter clarifying that CRT glass can go to copper smelters under the CRT rule and responses to individual questions.
- We have published two rounds of FAQs to address many of the questions regarding the CRT exclusion, which we distributed to various stakeholder groups and posted online. <http://www.epa.gov/osw/hazard/recycling/electron/crt-faq.htm>

Near-Term Actions

- Bring together various stakeholders to take part in a collaborative discussion on CRTs at our Electronics Forum in September. Use this discussion to inform a larger conversation at the 2014 e-Scrap conference in October.
- Assist industry with questions on recycling options for CRT glass.
- Add to CRT FAQs as needed.
- Work towards identifying a set of actions that the community can take to reduce the potential for adverse environmental impacts related to CRT stockpiles.

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