

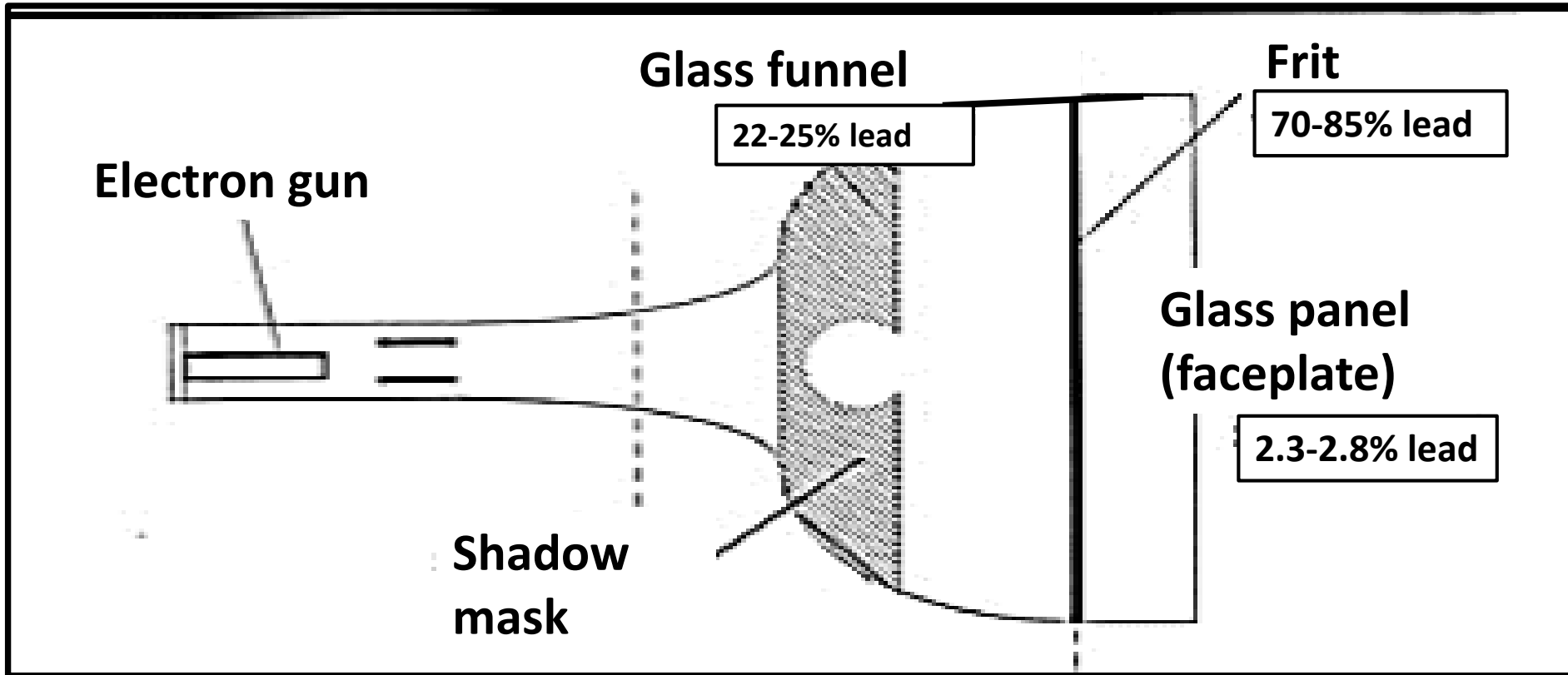
RCRA Regulation of CRTs

2016 E-SCRAP CONFERENCE

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TRACY ATAGI, OFFICE OF RESOURCE CONSERVATION
AND RECOVERY

CRT Components



Cathode ray tubes typically contain about 4 pounds of lead, mostly located in the glass funnel and frit, and generally test as hazardous waste under U.S. regulations.

Picture courtesy of Massachusetts Department of Environmental Protection.

What is the 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.
- Because of rising costs, negative economic incentives, and shifts in CRT glass markets, some CRT processors and recyclers are choosing to store the glass indefinitely rather than send it for recycling (or disposal), which increases the risk of mismanagement and/or abandonment of the CRTs.

What is the issue?

- 2013 (AZ, CO, PA, NY) – 23,000 tons of CRT glass abandoned.
- Mar 2014 (OH) – 1,500-3,000 tons of CRT glass abandoned. Recycler was both R2 and e-Stewards certified.
- Mar 2014 (AZ) – CRT recycler was fined \$120,000 for improper storage and recycling of CRTs.
- Mar 2014 (UT) – Fire occurred at CRT recycler, which may have been ignited from storing CRTs outside where reflection from the sun could ignite a blaze.
- Jul 2015 (MA) – Suspicious fire occurred at warehouse holding thousands of CRTs
- Oct 2015 (KY) – Recycler admitted to burying hundreds of wooden pallets and dozens of cardboard boxes filled with television monitors on their property.
- March 2016 (AZ, OH) – Recycler closes leaving behind over 130,000 tons of CRTs and CRT glass.



Requirements of the 2006 CRT Rule

- Under the 2006 CRT rule, CRTs sent for recycling are not regulated as hazardous waste as long as certain conditions are met, including requiring that the CRTs are:
 - 1) Properly labeled
 - 2) Stored and transported in an appropriate container
 - 3) Processed only in a building with roof, floor and walls
 - 4) Not subjected to temperatures high enough to volatilize lead from CRTs
 - 5) Meet speculative accumulation limits.
 - 6) Comply with export requirements [revised by 2014 CRT Export Rule].

Speculative Accumulation

- CRTs and CRT glass are not speculatively accumulated if: (1) the material is potentially recyclable and there is a feasible means of being recycled and (2) at least 75% of the material is recycled, or transferred to a different site for recycling, during the calendar year.
- **Both** of these requirements must be met.
- Moving hazardous secondary material from one site to another site for purposes of storing at that second site (but not recycling it) does not reset the calculation for speculative accumulation.

U.S. Regulation of Exports of CRTs

- Under the 2014 CRT Export Rule, exporters of **used, intact CRTs exported for reuse** must notify EPA annually.
 - The notification must include information on the destination facility, quantities of CRTs exported, and information about transit countries.
- **Used CRTs (either intact or broken) exported for recycling** are subject to export notice and consent requirements.
 - In addition, beginning March 1, 2016, exporters must file an annual report summarizing the quantities (in kilograms), frequency of shipment, and ultimate destination(s) (i.e., the facility or facilities where the recycling occurs) of all used CRTs exported for recycling during the previous calendar year.

Companies Approved as of September 12, 2016 to Export Cathode Ray Tubes (CRTs) for Recycling

- Currently, exports of CRTs for recycling have been approved to one or more recycling facilities in Canada, Mexico, the Netherlands, and Spain.

Exporter Name	Exporter Site Address	Country of Import	End Date for Approved Exports
Technologies Displays Americas, LLC	1778 Carr Road, Suite 4B Calexico, CA 92231	Mexico	6/30/2017
Samca International, Inc.	32 Woodgreen Drive Pittsford, NY 14534	Netherlands	8/14/2017
RSR Partners, LLC, DBA Regency Technologies	1831 E. Highland Road Twinsburg, OH 44087	Spain	12/14/2016
RMG Enterprise Inc.	113 Hillside Avenue Londonderry, NH 03053	Spain	12/14/2016
Electronic Recyclers International	293 NC 740 Highway Building 134 Badin, NC 28009	Spain	12/14/2016
Electronic Recyclers International	89 Cross Street Holliston, MA 01746	Spain	12/14/2016
Electronic Recyclers International	2540 Airwest Boulevard Plainfield, IN 46168	Spain	12/14/2016
Icon Recycling, LLC	3365 Norcross Lane Dallas, TX 75229	Mexico	2/28/2017
E-Waste Brokerage, Inc.	1562 Crittenden Road Alden, NY 14004	Canada	4/13/2017

Companies Exporting Cathode Ray Tubes for Reuse

Companies listed in the table below have submitted written notifications to OECA/ICAD to inform EPA of their intention to export used, intact cathode ray tubes (CRTs) for reuse as required under the CRT rule ([Title 40 of the Code of Federal Regulations in Section 261.41](#)). Only one of the notices with expiration in 2016 is still active.

Exporter Name	Exporter Site Address	Date of Notice Expiration
American Retroworks International	PO Box 1010 Middlebury, VT 05753	5/11/2016
Clifton Trading Company	1230 Highway 34, 1st Floor Aberdeen, NJ 07747	7/21/2016
World Computer Exchange	936 Nantasket Avenue Hull, MA 02045	11/3/2016

U.S. Regulation of Processed CRT Glass

- To be exempt from hazardous waste regulation, processed CRT funnel glass must be sent to a lead smelter or glass-to-glass manufacturer, or to a legitimate use.
- A legitimate use under the regulations (40 CFR 261.2(e)) means a legitimate use as an ingredient in an industrial process to make a product (provided that the materials are not being reclaimed) or use as an effective substitute for a commercial product.
 - However, processed CRT glass that is recycled in a use constituting disposal (use in a product that is placed in or on the land) is subject to the hazardous waste requirements in 40 CFR 266 Subpart C
- In addition, processed CRT glass that has been treated to be non-hazardous and to meet land disposal restrictions can be placed in a non-hazardous waste landfill, including being placed for “long-term storage” or for use as alternative daily cover.

Legitimate Uses of CRT glass

- To determine if a specific CRT glass use is legitimate use or reuse, a company should evaluate whether (per 40 CFR 261.43):
 - the processed CRT glass provides a useful contribution,
 - the recycling process produces a valuable product or intermediate
 - the processed CRT glass is managed as a valuable commodity and
 - the product of the recycling process is comparable to a legitimate product.
- EPA approval is not required in order to recycle CRT glass. However, both CRT glass recyclers and the companies who send CRT glass to those recyclers must determine whether the recycling is legitimate. Companies may wish to consult with their state regarding the legitimacy of a specific CRT use.
- EPA has issued two letters providing further guidance on legitimate final uses:
 - Use as a fluxing agent at copper smelters
 - Use as a substitute for lead oxide in ceramic tile manufacturing.

Exports of Processed CRT Glass

- Processed CRT glass exported for CRT glass making or lead smelting or a legitimate use under the regulations is not subject to the export requirements of the CRT exclusion.
 - However, generators still must be able to demonstrate that their CRT glass meets the terms of the exclusion.
- Exports of processed CRT glass for use constituting disposal (e.g., aggregate in concrete that is applied or placed into or onto the land) are subject to the RCRA hazardous waste export regulations.

For Further Information

For more information on CRT regulations in general:

<https://www.epa.gov/hw/cathode-ray-tubes-crts-0>

<https://www.epa.gov/hw/frequent-questions-about-regulation-used-cathode-ray-tubes-crts-and-crt-glass>

For more information about the RCRA requirements for CRT exports:

<https://www.epa.gov/hwgenerators/requirements-transboundary-shipments-specific-wastes>

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