

# Electronic Product Management Issues

## Cathode Ray Tubes (CRTs) Defined as Hazardous

California's Department of Toxic Substances Control (DTSC) verified in March 2001 that under State law, discarded cathode ray tubes (CRTs) are hazardous waste. This has prompted significant changes in the way California has resolved to manage electronic waste (e-waste) in the future. While CRT-containing products are safe as long as they are intact, they are banned from disposal in California landfills and must be properly recycled.

## Management of Electronics

Discarded electronic equipment represents a growing waste management problem in California. E-waste includes those electronic products that are at or near the end of their useful lives. Computers, televisions, VCRs, DVDs, cell phones, stereos, speakers, microwaves, copiers, printers, and fax machines are common electronic products that fall into this category.

When disposed in landfills, these products have the potential to contribute significant levels of toxic materials to the leachate produced in landfills. These include lead, polychlorinated biphenyls (PCBs), mercury, cadmium, arsenic, zinc, chromium, and selenium.

The CRTs found in computer monitors and television sets can contain 20 percent lead oxide by weight. According to a recent U.S. EPA report on electronics, CRT-containing products may contain four pounds of lead on the average.<sup>1</sup> Because of the lead content, repair, recycling, or disposal businesses that handle CRTs must adhere to new rules governing the handling of these materials.

## Emergency Regulations Enacted

Under emergency regulations enacted by DTSC in August 2001, CRTs may now be managed as universal waste. This designation is part of Cal/EPA's strategy to encourage technologies and the necessary infrastructure to recover and recycle materials from electronics equipment that would otherwise become hazardous waste. The emergency regulations can be found at: [www.dtsc.ca.gov/LawsRegulationsPolicies/CRTs/CRT\\_emerg\\_regs.html](http://www.dtsc.ca.gov/LawsRegulationsPolicies/CRTs/CRT_emerg_regs.html).

## Growing Number of Computers in Waste Stream

Every day in California, more than 6,000 computers become obsolete.<sup>2</sup> It is estimated that electronic waste currently represents between two and five percent of the national municipal solid waste stream, and is expected to increase by three to five percent per year.<sup>3</sup> In California, this represents approximately two to three million tons of electronic waste per year.

## Waste Board Publishes 2001 E-Waste Diversion Study

In August 2001, the California Integrated Waste Management Board commissioned MGT of America to conduct a study on electronics in California. The study—entitled *Selected E-Waste Diversion in California: A Baseline Study*—indicates that approximately 2.9 million TVs (74,000 tons) and 3.2 million computer monitors (48,000 tons) are stockpiled in California households.

Residential survey results also indicated that 18.5 percent of California households stockpile their outdated televisions. Of those, 13 percent store one television, 3.9 percent store two, and 1.6 percent store three or more television sets.

When it comes to computers, California households were found to stockpile 19.4 percent of their defunct computer monitors. Of those documented, 13.9 percent were stockpiling one monitor, 2.7 percent were stockpiling two monitors, and 2.8 percent were stockpiling three or more computer monitors.

Furthermore, the study projected a gap between current processing capacity (which includes primary processors who refurbish and repair electronic products, and secondary processors who dismantle and recycle CRT components) and the estimated volume of CRTs that will be diverted from disposal in 2006. This processing capacity shortfall reflects a difference of thousands of tons of e-waste and millions of dollars in additional collection and disposal costs.

The complete e-waste diversion study is available on our Web site at: [www.ciwmb.ca.gov/Publications/default.asp?pu bid=933](http://www.ciwmb.ca.gov/Publications/default.asp?pu bid=933).

## **Waste Board Unveils New Electronics Directory**

In January 2002, the Waste Board released the Electronic Product Management Directory, an online database that provides information and resources on the proper management of electronic products. This database adds to the growing number of resources aimed at assisting local jurisdictions in managing their electronic waste stream.

The directory enables users to search for businesses that accept electronic products for reuse and/or recycling. Searches can be made by facility name, county/region, or type of electronic product accepted. For more information, visit: [www.ciwmb.ca.gov/electronics/collection/](http://www.ciwmb.ca.gov/electronics/collection/).

The Electronic Product Management Directory is located within the Waste Board's Electronic Product Management Web site. For further information, visit: [www.ciwmb.ca.gov/electronics/](http://www.ciwmb.ca.gov/electronics/).

## **Future Waste Board Projects on the Horizon**

The Waste Board has undertaken a number of initiatives focused on the management of electronics in California. In partnership with the Department of General Services (DGS), the Waste Board will develop procurement and end-of-life management guidelines to assist State agencies manage their electronic equipment. The guidelines will establish environmentally preferred purchasing procedures for electronic equipment and help State agencies increase the reuse and recycling of electronic equipment, improve the efficiency and use of electronics, reduce the amount of electronic equipment disposed, and ensure the environmentally safe handling of discarded electronic equipment.

Another project will focus on the development of best management practices for electronic waste. This contract will include a market gap analysis and develop a set of guidelines for local governments on best management practices. It will also produce public education materials and fact sheets on how to properly manage electronic waste.

Designed to support our ongoing involvement in the National Electronic Product Stewardship Initiative (NEPSI), the Waste Board has also initiated a contract to address the anticipated costs facing local governments in the management of electronic products.

## **Recycling Costs Affect Local Jurisdictions**

Recycling CRTs currently costs between \$10 and \$30 per unit.<sup>4</sup> Should local governments continue to collect obsolete computers and CRTs, taxpayers will ultimately be responsible for the associated program costs.

Throughout California, a number of local jurisdictions have already included electronic products in their household hazardous waste (HHW) collection programs. This could result in an increase in overall HHW collection costs.

Together, the cost for these municipal collection programs would be millions of dollars annually. This does not include the collection of stockpiled computers stored in garages, basements, storage rooms, and attics. This could push the overall collection and management costs to between \$500 million and \$1 billion dollars.

## **E-Waste Cost-Sharing Programs**

Although local jurisdictions are currently taking the lead and paying for the collection and recycling of obsolete computers and CRTs, there are many other cost-sharing models under consideration.

Costs for collection, reuse, and recycling of electronic products could be borne by manufacturers, retailers, purchasers, and government agencies. Other solutions might include a deposit paid at the point of purchase, or a rebate program encouraging consumers to return used CRTs to the original point of purchase.

As stakeholders strive to reach equitable agreements on product stewardship and cost-sharing models, many are looking to the WEEE Directive that has been debated in Europe for the past five years.

In this model, the Directive does not charge households a fee for collection. Instead, producers are required to pay for the transport of electronics, once collected, as well as the processing costs. This financing model requires producers to pay into one collective fund to

cover these costs. Producers are also required to provide recycling options within their initial sales contract when selling new equipment to businesses.

## **Product Stewardship Goals Unite Stakeholders**

By definition, product stewardship is the need for all parties to take responsibility for the environmental impacts of a given product at every stage of its life, including design, manufacture, marketing, and use.

The greater the ability an entity has to minimize a product's life-cycle impacts, the greater is its degree of responsibility for addressing those impacts.

The National Electronics Product Stewardship Initiative (NEPSI) Dialogue is a stakeholder group formed to address end-of-life management strategies, while seeking to encourage manufacturers, government agencies, and environmental groups to work together to reduce e-waste. Both DTSC and CIWMB have been involved in this dialogue and are committed to the goals of this initiative.

The main goal of the dialogue is "the development of a system, which includes a viable financing mechanism, to maximize the collection, reuse, and recycling of used electronics, while considering appropriate incentives to design products that facilitate source reduction, reuse, and recycling; reduce toxicity; and increase recycled content."

**Electronic waste (e-waste)  
now qualifies for the  
Waste Board's household  
hazardous waste grants.**

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## Resources

For further information on policies related to computer and CRT management, reuse, and recycling, please refer to the following resources:

California Integrated Waste Management Board–Electronics Home Page  
[www.ciwmb.ca.gov/electronics](http://www.ciwmb.ca.gov/electronics)

Department of Toxic Substances Control (CRT Emergency Regulations)  
[www.dtsc.ca.gov/LawsRegulationsPolicies/CRTs/CRT\\_emerg\\_regs.html](http://www.dtsc.ca.gov/LawsRegulationsPolicies/CRTs/CRT_emerg_regs.html)

National Electronics Product Stewardship Initiative (NEPSI)  
[www.nepsi.org](http://www.nepsi.org)

Western Electronic Product Stewardship Initiative (WEPSI)  
[www.wepsi.org](http://www.wepsi.org)

Product Stewardship Institute  
[www.productstewardshipinstitute.org](http://www.productstewardshipinstitute.org)

Electronics Industries Alliance  
[www.eia.org](http://www.eia.org)

Silicon Valley Toxics Coalition  
[www.svtc.org](http://www.svtc.org)

Californians Against Waste  
[www.cawrecycles.org](http://www.cawrecycles.org)

Materials for the Future Foundation  
[www.materials4future.org](http://www.materials4future.org)

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<sup>1</sup> US/EPA, “Electronics: A new opportunity for waste prevention, reuse and recycling,” June 2001.

<sup>2</sup> California Integrated Waste Management Board, Selected E-Waste Diversion in California: A Baseline Study, November 2001.

<sup>3</sup> Arensman, Russ, “Ready for Recycling?” Electronic Business, The Management Magazine for the Electronics Industry, November 2000.

<sup>4</sup> Californians Against Waste, Poison PCs and Toxic TVs: California’s biggest environmental crisis that you’ve never heard of, 2001.

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web site at [www.ciwmb.ca.gov](http://www.ciwmb.ca.gov).*