

**ENVIRONMENTAL MANAGEMENT OF ELECTRONICS
IN THE FEDERAL GOVERNMENT:
A LIFE-CYCLE APPROACH**

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ABSTRACT

The worldwide revolution in electronic products has had both positive and negative impacts on the environment. Electronics enable us to make information exchange quicker and easier, reduce our need to move people, products, and information by conventional means and allow us to cut traffic, save energy, and reduce pollution. But waste from electronics are the fastest growing waste stream in the U.S., the electronics recycling rate is low, and electronics contain various chemicals and heavy metals that could pose environmental risks.

This session discusses the challenges and life cycle initiatives related to environmental management of electronics within the Federal government.

CRUNCHING THE NUMBERS

In 1999, more than 29 million computers became obsolete – only 14 percent were recycled. By 2004, as many as 325 million obsolete computers could be disposed in landfills. By 2005, an estimated 130 million cellular telephones will be discarded annually – which translates into 65,000 tons of trash, toxics, etc. The U.S. Federal Government is the single largest purchaser of electronics in the world. For FY2003, the federal government has budgeted approximately \$50 billion for IT products and services. Most of the 1.8

million employees in the Federal government have a computer – given a three-year life cycle, the government discards approximately 10,000 computers per week. All of this equipment contains components that can be recycled and/or reused in the current marketplace.

MONITORING THE SITUATION

It's not simply the mass of products use and disposition that threatens the environment – it's also the toxic materials that they contain –e.g., lead, mercury, chromium, as well as, others. Environmental contamination is always a risk if products containing toxic materials are not properly managed. Governments, businesses, and non-governmental organizations are all interested in finding ways to better manage electronics. The federal government has an opportunity, and a responsibility, to provide leadership in environmentally sound practices and cost-effective management of our electronic assets.

Accordingly, within a year we look forward to launching the Federal Electronics Challenge to encourage federal agencies to purchase greener electronics and manage their electronic assets in an environmentally sound manner across their life cycle. The following five sections provide a snapshot of other Federal government initiatives and regulations geared

towards responsible environmental management throughout the electronics life cycle – i.e., design and manufacture, procurement, use and reuse, recycling, and on to its ultimate disposition.

SETTING UP (DESIGN)

The first step is the product's design. Can a product from its inception be created to have less of an environmental impact on the environment throughout its life, and still meet its maker's and consumers' cost and performance demands? The goals could include reducing toxicity, reducing energy use, streamlining product weight and materials, identifying opportunities for easier reuse, and more.

EPA's Design for the Environment (DfE) Program has formed several successful partnerships with the electronics sector to sponsor challenges for improved electronics composition and packaging. Such partnerships include, the DfE Computer Display Partnership, the DfE Printed Wiring Board Partnership, and the DfE Lead-Free Solders Partnership

LOGGING ON (PROCUREMENT)

Through various statutes, presidential executive orders, and policies, the federal government works to buy a range of "green" products, including recycled-content, energy efficient, biobased, and environmentally preferable products – and electronics are part of this mix. The federal share of the electronics market is large enough to give us the chance to help shift the traditional procurement strategies to integrate more environmental consideration during the acquisition phase. Consequently, several federal facilities are exploring "greener" contract specifications for their electronics.

ON-LINE (USE)

We're working on how to better use our electronics. Computer monitors alone use over 60% of a computer system's energy. By enabling the Energy Star features on a monitor, using a dark screen saver, and turning off a monitor during long periods of non-use, energy usage can be cut significantly. The Department of Energy (DOE) has developed software that helps operations ensure that the energy saving devices on their systems are enabled.

DOE and EPA are setting energy efficient standards and issuing Energy Star labels for additional electronic equipment. And President Bush's Executive Order 13221 requires federal agencies to purchase products that use no more than one watt in their standby power-consuming mode, which standard is now being adopted by many around the world.

REBOOTING (REUSE & RECYCLING)

Reuse is always our first option. Electronics no longer needed by one agency go through screening to see if another could use them. Under Executive Order 12999, agencies can transfer surplus computer equipment to schools, educational nonprofit organizations, other agencies, and states.

The Department of Defense has initiated the Demanufacturing of Electronic Equipment for Reuse and Recycling (DEER2) project to investigate, test, and deploy technology upgrades in the public and private sectors to encourage electronic equipment reuse and recycling.

EPA has several initiatives to promote electronics reuse and recycling. Its proposed CRT Universal Waste Rule is an important step towards helping encourage the reuse and recycling, instead of landfilling, of CRTs. Also, EPA recently kicked off its “Plug-In to Recycling” campaign as part of its Resource Conservation Challenge - EPA, manufacturers, retailers, recyclers, local governments, states, trade associations, and non-profits are working together to boost the safe collection and recycling of electronics nationwide.

SHUTTING DOWN (DISPOSITION)

Much of the current thinking and work on electronics involves discouraging disposal of certain materials. For example, both California and Massachusetts have banned the landfilling of CRTs, and EPA is working with the University of Florida to determine if electronic equipment can be characterized as hazardous.

Under the National Electronics Product Stewardship Initiative (NEPSI), EPA and representatives from industry, government, and non-governmental organizations, are trying to develop a shared national system to finance the collection of obsolete electronics.

The federal government is considering a government-wide contract that would ensure electronics waste is handled in an environmentally sound manner. And we are preparing the needed implementing RCRA legislation to forward to Congress so that the U.S. can finally ratify the Basel Convention.

OUTLOOK

Many other initiatives and partnerships are forming to address this broad range

of important issues. For example, several manufacturers now offer recycling services to their customers (for a range of fees) in the U.S. And recyclers are increasingly focusing on the opportunities – and hurdles – involved in recycling the electronics waste stream.

We are optimistic that soon consumers and businesses in the U.S. will be able to purchase electronics that have been designed with fewer toxics, greater energy efficiency, and improved reusability – and that will at the end of their useful life be easily returnable at convenient, inexpensive outlets so they can be reused and recycled in an environmentally safe manner and with a robust market for those materials. Manufacturers, retailers, and recyclers are encouraged to join government and government organizations and strive to achieve this vision and become better stewards of our electronic assets.

ABOUT CHARLES JOHNSON

Mr. Charles Johnson is the Electronics Stewardship Program Manager for the Office of the Federal Environmental Executive (OFEE). In his capacity at OFEE, he is involved in the coordination of various Federal government initiatives geared towards responsible environmental management throughout the electronics life cycle. Mr. Johnson has extensive experience in Recycling and Waste Minimization, and prior to his tenure at OFEE, he served as the Pollution Prevention Director for the Naval Air Systems Command. Mr. Johnson has a B.S. degree in Mechanical Engineering from Temple University and a M.S. degree in Environmental Engineering from Pennsylvania State University.

