

# Electronics Stewardship in the United States of America

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- Importance of Recycling Electronics
- Overview of National Strategy of Electronics Stewardship (NSES)
- Status of EPA activities under NSES
- Highlights of other Federal activities

# Importance of Reuse and Recycling



**Complex Devices:** Electronics are constantly changing in design & makeup

- Contain steel, plastic, glass, ceramics, copper, aluminum, lead, nickel, lithium, cadmium, mercury, beryllium, gold, silver, & flame retardants, to name a few
- Different components have different potential for reuse, recycling and recovery

**Prevents Harm:** Some electronic waste contains components that could present an environmental risk if not managed safely

- Cathode Ray Tubes contain 2-5 lbs lead
- Back lighting contains mercury in lamps
- Circuit boards may contain leaded solder

**Conserves Resources:** Reusing or recycling electronics conserves natural resources such as gold, silver, palladium by avoiding the need to mine virgin materials

- Contain valuable materials; 1 metric ton of obsolete cell phones contain on average:
  - 140 kilograms copper                      3.14 kilograms silver
  - 300 grams gold                              130 grams palladium
  - 3 grams platinum

**Avoids Pollution:** Reducing the need to mine new elements avoids air and water pollution, and greenhouse gas emissions that can be caused by mining and refining virgin materials



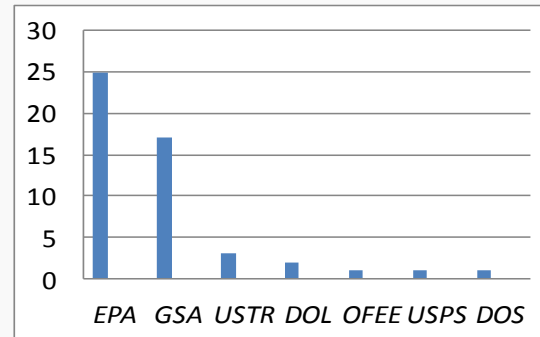
- **11/15/10:** Presidential Proclamation established the U.S. Government Interagency Task Force to lead a coordinated federal effort to improve safe handling and disposal of used electronics throughout the product lifecycle
  - Co-Leads: CEQ, EPA and GSA
  - 15 Agencies
  
- **7/20/11: *National Strategy for Electronics Stewardship (NSES)*** announced; 4 overarching goals:
  - Promote the development of more efficient and sustainable electronics products
  - Direct federal agencies to buy, use, reuse and recycle their electronics responsibly
  - Support recycling options and systems for American consumers
  - Strengthen America's role in international electronics stewardship
  
- Will create opportunity to better protect human health and the environment, conserve valuable resources, save money and create jobs

# Background: NSES Commitments



- National Strategy for Electronics Stewardship (NSES) contains 19 actions that include 47 discrete tasks
- Seven Federal Agencies have commitments under the NSES

- Tasks per agency:



- EPA offices actively engaged:
  - Office of Solid Waste and Emergency Response (OSWER)
  - Office of Chemical Safety and Pollution Prevention (OCSP)
  - Office of International and Tribal Affairs (OITA)
  - Office of Enforcement and Compliance Assistance (OECA)
  - Office of Research and Development (ORD)
  - Office of Air and Radiation (OAR)

# Goal 1: *Build incentives for design of greener electronics; enhance science, research and technology*



- Convene multi-stakeholder groups to design greener electronics products that have reduced environmental impacts across the lifecycle and are easier to recycle.
- Launch a series of prize competitions to spur innovations in technology and design across the lifecycle of electronics.
- Develop new standards for Electronics Procurement Environmental Assessment Tool (EPEAT) and expand the ENERGY STAR program beyond the energy consumed by electronics while in use.
- Support research into the toxicology, exposure pathways, and recovery methodologies of the rare earth elements (and their compounds) used in electronics and during their recycling, remanufacturing and disposal.

# Status of Design & Research Greener Electronics Commitments



- **Building on the Electronics Procurement Environmental Assessment Tool (EPEAT)**, a tool that shows electronics products designed with the environment in mind. EPEAT products have fewer toxic materials, use less energy, last longer, have more recycled content and are easier to recycle than standard equipment. EPA committed to:
  - Made preparations to establish multi-stakeholder groups to address key research questions and design challenges, and accelerate development of and investment in green electronics design standards;
  - Launched the Greener Products website to promote consumer purchasing of green electronics that are certified as meeting stringent environmental performance criteria that address environmental impacts across the products' entire lifecycle <http://www.epa.gov/greenerproducts/>
  - Adding the new, EPEAT-registered imaging equipment and televisions to the products that Federal Agencies purchase from to ensure expansion of green electronics certification programs.
  
- **Promote scientific research into the recovery of material from used electronics**
  - Life Cycle Assessment (LCA) of electronic products : Identify potential environmental trade-offs for reuse and recycle of materials in electronics (rare earth elements and plastics).
  - Health Impacts (ORD /NIOSH): Study on exposure during electronic recycling processes.
  - Create Innovation Challenges: Challenged industry to develop a system to track electronic devices and a list their chemical contents to advance recycling and recovery of valuable products.
  - Sustainable Electronic Workshop – Convened key stakeholders to assess current and future needs.

## Goal 2: *Federal Government Leads by Example*



- Revise the Federal Electronics Stewardship Policy to require Federal agencies to use recyclers that are certified to the certification programs and ban landfill of federally used electronics.
- Improve tracking of used Federal equipment throughout the lifecycle.
- Encourage electronics manufacturers to expand their product take-back programs in Federal electronics purchase, rental and service contracts.
- Require and enable recipients of former Federal equipment that has been sold, transferred, or donated for reuse to use certified recyclers and follow other environmentally sound practices.
- More effectively direct Federal Government spending on electronics toward green products through procurement.



# Status of Federal Government Leads by Example



- General Services Administration (GSA) is developing a government-wide regulation that will require Federal Agencies to maximize reuse, clear data and to ensure used Federal equipment is managed by certified recyclers.
- EPA is working with GSA to conduct an Implementation Study of the R2 and e-Stewards certification programs to determine if the programs are implemented transparently, consistently and are achieving desired results.
  - Will inform GSA requirements for managing federal used electronics.
  - Hope to understand better the strengths and weaknesses of the programs.
- GSA will improve tracking of used Federal equipment throughout the recycling chain.
- EPA launched the Federal Green Challenge (FGC)
  - Program goal is for federal facilities located throughout the U.S. to reduce their environmental impacts in six areas, including electronics.
  - In 2012, FGC participants reported recycling 5,700 tons of electronics.

## Goal 3: *Improve Handling of Used Electronics in the U.S.*



- Launch voluntary partnerships with the electronics industry and stakeholders to increase collection of used electronics that are safely managed by certified recyclers.
- Provide guidance to electronics recycling employers on providing facilities that offer safe and healthful working environments.
- Establish approaches to gather, track, and provide public access to information on quantities and movement of used electronics within the U.S.

# Status of Improve Handling of Used Electronics in the U.S.



- Launch voluntary partnerships that center around certified recyclers.
  - EPA successfully launched the Sustainable Materials Management (SMM) Electronics Challenge
    - A voluntary partnership with electronics manufacturers and retailers (e.g., Best Buy, Dell, LG, Nokia, Panasonic, Samsung, Sharp, Sony, Sprint, Staples).
    - Partners commit to:
      - Send 100% used electronics collected to certified recyclers/refurbishers.
      - Increase total amount used electronics collected.
      - Promote transparency by publically sharing results.
  
- Increase the use of 3<sup>rd</sup> party certified recyclers by states, business and the general public to ensure proper handling and disposal of used electronics.
  - There has been an increased of awareness and demand in the use of certified recyclers.
  - Since release of the NSES in July 2011 to April 2013, there has been a 240% increase in certified recyclers.
  - EPA Developed and launched a map of recyclers and refurbishers that are certified to the electronics recycling certification programs.  
<http://www.epa.gov/epawaste/conserva/materials/ecycling/certmap.htm>

## Goal 4: *Reduce Harm from US Exports; Improve Handling in Developing Countries*



- **Improve information on trade flows and handling of used electronics**, and share data with Federal and international agencies, within the limits of Federal authorities.
- **Provide technical assistance and establish partnerships with developing countries** to better manage used electronics.
- **Work with exporters to explore how to incentivize and promote the safe handling** of remanufactured, recycled, and used electronics at home and abroad.
- **Propose regulatory changes** to improve compliance with the existing regulation that governs the export of cathode ray tubes from used computer monitors and televisions that are destined for reuse and recycling.
- **Support ratification of the Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

# *Status of Reduce Harm from US Exports; Improve Handling in Developing Countries*



- **Improve trade flow information on used electronics.**
  - UNU-StEP/MIT/NCER study to characterize transboundary flows of e-waste from US.
  - USITC report using trade data to estimate flows released February 2013.
  
- **Propose regulatory changes to better track exports and support compliance monitoring of CRTs exported for reuse and recycling.**
  
- **Provide technical assistance and establish partnerships with developing countries to better manage used electronics.**
  - Collaborating in Asia, Africa, Latin America and the Caribbean and North America.
  - Cooperate through bilateral and regional agreements/initiatives and with UNU-StEP.
  
- **Support ratification of the Basel Convention.**
  - Participation in Basel working groups (e.g. PACE, ESM) that develop guidance on recycling of used electronics and their transboundary movement.

# E-Waste Enforcement



- RCRA compliance monitoring and enforcement program includes the Cathode Ray Tube (CRT) regulations.
- Regions and states continue to inspect electronics recycling facilities and bring appropriate enforcement actions.
- EPA has concluded two recent criminal enforcement actions:
  - **Executive Recycling Inc.**, its owner, and its vice president, were convicted on multiple counts of mail and wire fraud, obstruction and environmental crimes related to illegally disposing electronic waste and smuggling. The company claimed to safely recycle e-waste in the U.S., but regularly exported obsolete and discarded electronic equipment with toxic materials to other countries.
  - **Discount Computers Inc. (DCI)** and its owner and a second company executive pled guilty to trafficking in counterfeit goods and services and violating environmental laws relating to the illegal export of CRTs. DCI was sentenced to pay a \$2 million fine and \$10,839 in restitution. The owner received 30 months incarceration, two years of supervised release, and must pay a \$10,000 fine.
- EPA with INTERPOL's Environmental Crime Program, launched Operation Enigma in late 2012.
  - Program identifies and disrupts the illegal collection, recycling, export, import and shipping of discarded electronic products.
  - The first phase targeted Europe and Africa and led to the seizure of 240 tons of electronic equipment and electrical goods and the launch of criminal investigations against some 40 companies involved in all aspects of the illicit trade.

# Other Federal Agencies NSES Commitments <https://www.fedcenter.gov>



- **General Services Administration (GSA):**
  - Revising policy and regulations for managing the Federal Government’s electronics.
  - Proposed regulation to include requirement for Federal Government to use certified electronics recyclers to manage unwanted used electronics.
- **Occupational Safety and Health Administration (OSHA):**
  - Developing “Safety and Health Management Guidelines for E-Waste.”
- **National Institute for Occupational, Safety and Health (NIOSH):**
  - Conducting studies (with EPA) on exposures during electronic recycling processes.
- **United States Trade Representative:**
  - Commissioned a US International Trade Commission report “Used Electronic Products: An Examination of U.S. Exports.”
- **United States Postal Service:**
  - Launched USPS Blue Earth, a electronics recycling program that allows Federal Agencies and their employees to recycle electronics free of charge; program uses certified recyclers.
  - Especially valuable to facilities located in rural areas by providing easy transportation for recycling.

# Benefits: National Strategy for Electronics Stewardship



- Using an Interagency approach to develop the National Strategy for Electronics Stewardship:
  - Elevated importance and priority of proper electronics management.
  - Allowed fast and easy communication about electronics management throughout Federal Government.
  - Encouraged other Federal Agencies (e.g., USTR, OSHA, USPS) to develop needed information, guidance or programs.
  
- Developing the National Strategy for Electronics Stewardship:
  - Provided a coordinated and public blueprint of actions the Federal Government will accomplish.
  - Electronics stakeholders better understand the importance the Federal Government places on electronics stewardship.
  - Electronics recyclers realize the importance of becoming certified to an electronics recycling standard.