Closing the Circle News

Federal Agencies Agree to Reduce Electronic Waste

The White House Council on Environmental Quality joined the United States Postal Service, the Environmental Protection Agency, and the Departments of Defense, Interior, and Energy in a first of a kind Memorandum of Understanding (MOU) to reduce the environmental impact of the government's electronic equipment use and disposal.

Electronics product stewardship reflects the ongoing shift in environmental management from pollution control and clean-up to a focus on the environmental impacts of product design and end-of-life disposition. Electronic equipment often contains hazardous constituents such as mercury, lead, cadmium, and chromium, which can be hazardous to the environment as disposal in municipal landfills and incinerators increases.

The Federal government is the nation's largest single consumer of electronic equipment, spending approximately $5 billion on computers in 1996 alone. Federal government specifications thus can help to drive the design of environmentally preferable electronic equipment and the development of a cost-effective national reuse and recycling infrastructure for surplus electronics.

The new MOU creates the foundation for the agencies to work together to increase demand for

National Electronics Stewardship Workshop Highlights Waste Management Issues

This past February, MOU partners DoD, DOE, DOI, EPA, and USPS sponsored the first "National Electronics Stewardship Workshop" at the National Conservation Training Center in Shepardstown, West Virginia. Hosted by West Virginia University and the Polymer Alliance Zone, the meeting provided Federal agencies, industry, and public interest groups the opportunity to discuss the Federal government's role in electronic stewardship.

Top business and government experts convened to discuss the current state of electronics recycling in industry and the public sector. The Workshop provided participants a unique opportunity to:

• compare current policies and practices for managing Federal end-of-life electronics, and discuss opportunities to improve the cost effectiveness and environmental impact of such practices;

• identify public and private sector practices that could be applicable to Federal agency programs;

• discuss international, national, or local regulatory or policy initiatives that could affect Federal agency programs, such as landfill bans or take-back legislation; and

• explore how Federally-funded technology programs are working with the private sector to foster the growth of the national infrastructure for electronics.

The Workshop participants agreed that management of electronics is a global concern impacting human health and the environment. Public and private sector cooperation will ensure that electronic assets will be handled in an environmentally safe way.

In Defense of Electronics Demanufacturing

Since 1998, in an effort to manage military-unique electronic equipment, the Defense Reutilization and Marketing Service (DRMS) has issued two electronics demanufacturing contracts to process Department of Defense (DoD) generated electronic equipment containing hazardous components and/or requiring demilitarization. The contracts help to minimize third party site liability resulting from the improper disposal of the hazardous components, minimize the health and safety risks associated with the demilitarization of DoD electronics, and maximize the reuse and recycling of electronics, components, and scrap.

By managing electronics in a secure environment, DRMS is able to closely monitor the process to assure environmental compliance and accomplishment of demilitarization

To date, DRMS has processed over 40 million pounds of DoD electronics, 75 percent being military equipment, with 20 percent requiring demilitarization. These contracts have removed and compliantly managed over 125,000 lbs. of hazardous material, intercepted and properly disposed of 116,000 lbs. of hazardous waste [free flowing dielectric fluid (PCBs)], and processed for recycling over 1.8 million lbs. of monitor glass, significantly reducing the risk for environmental contamination. For more information, contact James Wickemeyer, 616-961-5922.

Wiser Options for End-of-Life Electronics

The October 2000 "WasteWise Update" from the U.S. Environmental Protection Agency's WasteWise program discusses options for handling electronics. *Electronics Reuse and Recycling* explores what to do with end-of-life computers and other electronics, and how to revise purchasing strategies to avoid future disposal problems.

The publication features strategies adopted by WasteWise partners to reduce the waste generated by their electronic products, as well as actions taken by some electronics manufacturers to enhance reuse and recycling of their products. The Update also looks at actions taken by Federal and State governments to improve management of electronics waste, such as encouraging electronic product collection programs for households and small businesses. The Update can be viewed at the WasteWise website at www.epa.gov/wastewise/pub.htm.

In addition, the WasteWise program has launched a challenge to its more than 1,100 partners to reduce their end-of-life computer and other electronic waste. Partners have agreed to work with their suppliers on take-back or leasing agreements; refurbish, donate or recycle their end-of-life electronics; or reduce their electronics waste through other means. To learn more about the WasteWise program and how to sign up, visit the Web site at www.epa.gov/wastewise, e-mail at ww@cais.net, or call the WasteWise Helpline at 800 EPA-WISE (372-9473).
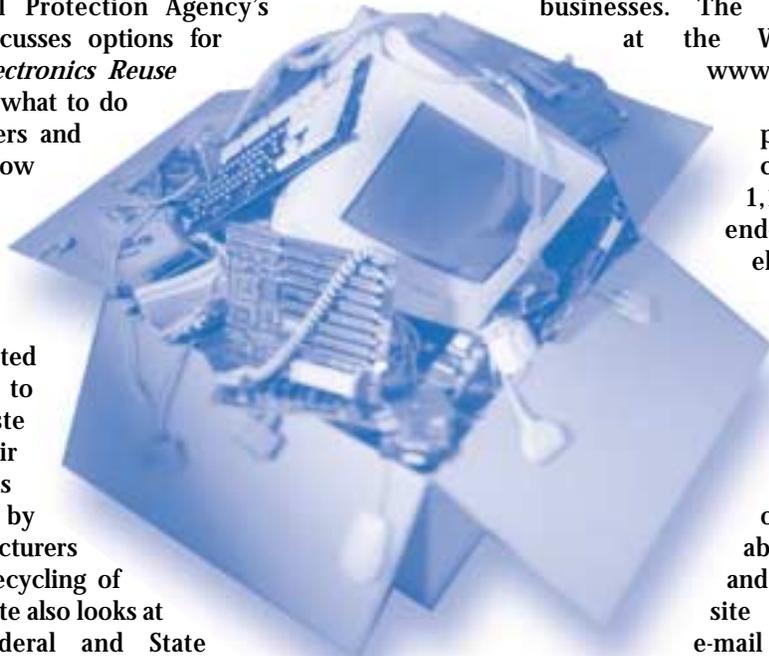
"greener" electronic equipment. Recognizing the tremendous opportunities available for electronics demanufacturing and recycling, the agencies also plan to encourage the growth and expansion of existing electronics reuse, demanufacturing, and recycling infrastructures and coordinate with state and industry efforts to increase better management of used electronics.
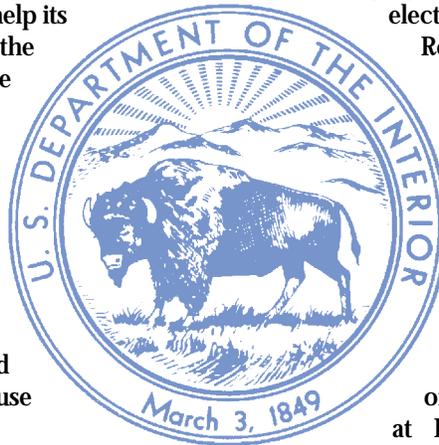
The MOU partners recognize that improved management of electronics has a national significance, and that any solution to the impact of electronic waste requires a collaborative effort focused on common objectives that include the Federal government in a leadership role. The MOU will be the blueprint for building the infrastructure necessary for establishing the Government as a leader in electronics stewardship. Other Federal agencies are encouraged to join the MOU. For more information, contact Ernest Woodson, White House Task Force on Waste Prevention and Recycling, at (202) 564-1078 or by e-mail at ernest.woodson@ofee.gov.

The "Interior" Look of Electronics Recycling

The Department of the Interior's National Business Center (NBC) has looked for a way to help its customers and other bureau activities in the Washington, D.C. metropolitan area recycle electronics, including unserviceable computers and related equipment. This new environmentally-sensitive NBC service, the first such program in the Department, is a result of an agreement between NBC and the DOD's Defense Reutilization and Marketing Service (DRMS). All Interior activities in the Washington metropolitan area can now send their electronic scrap to the NBC warehouse facility to access this recycling service.

U.S. Army Fort Meade, in Maryland, serves as a staging facility in the metropolitan area for collecting electronic scraps for shipment to DMC Electronics Recycling, DRMS' contractor. This agreement will also enable Interior facilities nationwide to send electronic scrap to nearby military installations that are designated as staging facilities for gathering and shipping electronic scrap for environmentally-sensitive recycling. The nationwide program is expected to be phased in by late Spring 2001. For more information about Interior's electronic recycling program, contact Bob Jarcho of the Office of Acquisition and Property Management at Robert_Jarcho@ios.doi.gov or by calling 202-208-3329.

Partnering for Electronics Recycling

The Department of Energy (DOE) has started a new electronics recycling pilot program open to all government agencies. The program has proven to be successful in promoting environmentally responsible disposition of surplus electronics while also saving tax dollars and creating new jobs.

Assets Utilization, part of DOE's Oak Ridge Operations in Oak Ridge, Tennessee, developed a partnership solution to address the surplus electronics disposition problem. Assets Utilization worked with the Community Reuse Organization of East Tennessee to establish the National Electronics Recycling Center Pilot Project. The Oak Ridge National Recycle Center (TORNRC) in Tennessee was selected to operate the center as a proving ground for the latest methods of recycling glass, plastics, and other materials. TORNRC, a self-sustaining commercial enterprise, focuses on recycling, reconditioning, refurbishing, and re-marketing computers, electronics, and peripherals. Nearly 97 percent of all materials sent to TORNRC is recycled or reused.

Over the past year, TORNRC recycled 1,325 metric tons of obsolete electronics from the government and commercial clients. TORNRC refurbishes the electronics for resale, or recycles the basic components, such as precious metals, copper, steel, aluminum, plastic, and glass, for profit. It is achieving a 99 percent recovery rate on electronics sent to the center. By sending electronics from several of its larger sites to TORNRC, DOE alone has avoided $2.5 million to date in costs related to storage and disposal of obsolete electronics.

Earlier this year, DOE's Hanford facility sent 37 pallets of computers and other electronic equipment weighing 22,260 lbs. to TORNRC. Hanford tried to send a balanced load containing a good mixture of both high-end and low-end electonics so that the value of the high-end equipment, which is very desirable to TORNRC, will pay for the cost of recycling the low-end and less valuable equipment.

As interest in the recycle project continues, the Assets Utilization, Community Reuse Organization of East Tennessee, and TORNRC team is looking at further expanding the program to handle classified equipment and the recycle/reuse of suspect contaminated electronics through additional teaming arrangements. The only option for these types of electronics at this time is treatment, storage, and/or disposal. Classified electronic equipment destruction is an important issue with DOE; consequently, the development of a program where destruction of this type of equipment is physically verified while allowing for the recycling of the raw materials is a challenge the team is willing to pursue. For additional information on using TORNRC for your agency's electronic recycling needs, contact Karen Deacon, DOE, at 865-576-4878 or by email at info@oakridgerecycle.com.

Not-for Profit Efforts

• **Goodwill Industries of Pittsburgh**'s computer recycling center is accepting thousands of computers for re-use. Trained technicians revamp many of the donated computers and sell them in a used computer store, "Goodwill Computers." Revenues generated from this retail operation help to support Goodwill's employment and training programs for people who have disabilities and other employment barriers.

Usually known for its discounted thrift clothing and housewares, Goodwill now also resells used computers to help people get training so they can become meaningfully employed. Computer recycling efforts began in 1995 through a cooperative effort involving Carnegie Mellon University, who donated its inventory of gently used computers, along with volunteer technicians, to get the project off the ground. Thousands of computers and peripheral parts have since been donated by corporations, businesses and individuals.

In addition to refurbished computer units, the store stocks hard-to-find computer parts such as memory chips, circuit boards, cables, and cords; peripherals such as laser and inkjet printers; new software; and a variety of new and used accessories and books. Prices for computer systems range from $100-$600. Laser printers fall into the $250 range.

"While not all of the computers are 'state of the art,' there are definitely some bargains to be found," said Dennis Abbott, the center's manager. "All of our computer systems are tested and are virus-free, and we have knowledgeable sales staff on hand to answer questions. We offer a generous return policy and warranty, also."

So there is life for that older computer after all. Call your local Goodwill to find out where the nearest donation site is to your area, or check their website at www.goodwill.org.

• The ten-state **Northeast Recycling Council, Inc.** (NERC) decided to address the electronics recycling challenge head on by engaging electronics industry representatives and many other stakeholders as it crafted and adopted a regional policy that has received broad support and much national attention.

The goal of NERC's *Regional Recycling Market Development Policy for Used Electronics* is to promote an economically and environmentally sustainable recycling system for used electronics in the region, and to support reductions in the volume and toxicity of materials used to make electronic products (i.e., source reduction). This policy statement reflects the opportunity that NERC members see for creating new businesses and jobs in the reuse and recycling industry by promoting the development of a system to efficiently and effectively reuse and recycle used electronics.

To read the full policy statement or to get involved with its implementation, visit NERC's web site (www.nerc.org) or call John Leigh, Program Manager, at 802-254-3636.

• **The Surplus Exchange, Inc.** is Greater Kansas City's link between Industry, Charity and the Environment. For over seventeen years, Surplus Exchange, a nonprofit organization, has collected business furniture and electronic equipment from local, regional and national businesses and then redistributed those materials to other nonprofit organizations.

The organization's mission is threefold: To benefit Not-For-Profit Organizations by providing them with refurbished and new electronics, furniture, materials and other equipment; to preserve the environment by keeping unwanted and obsolete business equipment out of the waste stream; and to utilize the resources and expertise from these operations to provide education and human service programs to the general community.

The Surplus Exchange maintains a membership of
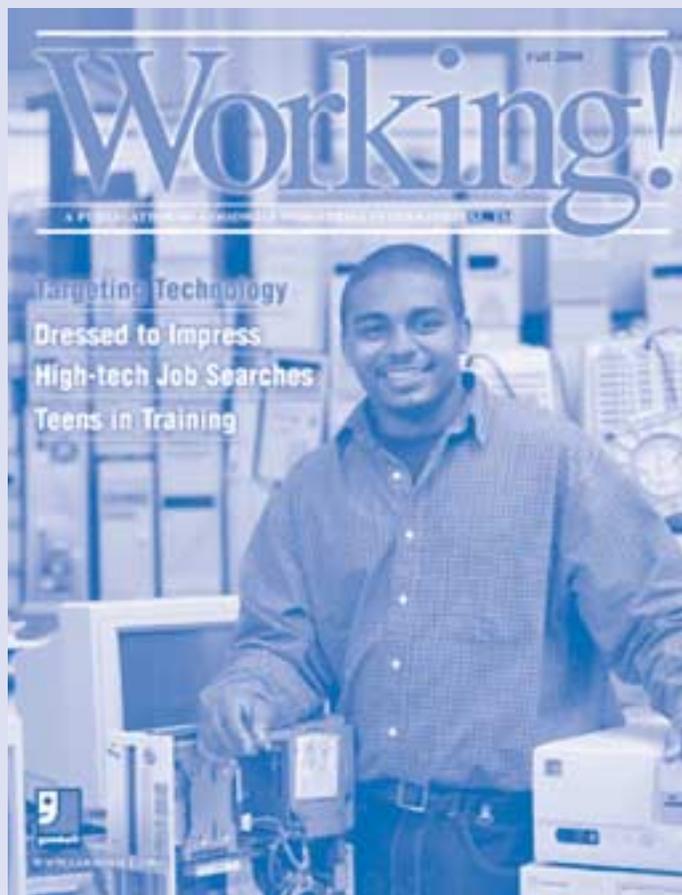
over 1,400 non-profit agencies. Organizations are notified when that special printer or set of eight matching blue chairs arrive at the warehouse. Items are priced at 1/4 to 1/3 of similar but new materials. By shopping at the Surplus Exchange, nonprofit organizations annually save over $300,000.

Surplus Exchange also provides a youth education program called "Learn and Earn". Middle and high school age youth spend 20 hours learning the basics of personal computer technology. Students learn the basic inner workings of a personal computer as they build one. At the end of the program, students have followed through with a difficult, yet rewarding task and not only take home a certificate of completion, but the computer they have built.

Surplus Exchange can be reached at 816-472-0444. Visit them on the web at www.surplusexchange.org.

State and Local Initiatives

these Sunday events, including press releases, brochures, listings on government web sites, and ads in local newspapers. Costs for the program are relatively low. Wherever possible, the collected equipment is provided to schools or to non-profit agencies. The remaining computers are remanufactured or the parts recycled. For more information, contact Richard Keller, Maryland Environmental Service, at 410-974-7254, or by email at rkell@menv.com.

• **The Commonwealth of Pennsylvania** recently developed recycling clauses for its computer leasing contracts. The clauses require contractors to be responsible for the removal of all equipment designated for removal by the using agency. All removed equipment is to be recycled, meaning that it is to be reused or dismantled for the reuse or recycling of its component parts. Contractors are also required to provide a recycling plan for the removed equipment. For more information on the recycling clauses, visit www.dgs.state.pa.us or contact the Commonwealth Agency Recycling Office in the Department of General Services at 717-772-2300.

• **Montgomery County, Maryland** offers computer recycling services to residents and businesses on a permanent, weekly basis. The county accepts computers and related equipment regardless of age or operating speed, including: central processing units, hard drives, monitors, keyboards, printers, copiers, laptop computers, wires and power cords, computer speakers, surge protectors, video cards, scanners, computer mice, software, and other peripheral computer equipment.

Montgomery County held a highly successful "try-out" event in March 2000 that garnered about 15 tons of computers and related equipment. Based on the March event, the County decided to offer similar events throughout the year. From June through December 2000, the county conducted seven (7) one-day events. The events netted more than 45 tons of recyclable computers and peripherals. The county used heavy publicity for

• **Jackson County**, a rural southern **Illinois** county of 61,000 people, held a two-day electronics collection in October, 2000. The collection was open to the general public, schools, businesses and other organizations.

Participants dropped off 40,000 lbs. of electronics - enough to almost completely fill two 53' semi-trailers. More than half of the equipment received belonged to local school districts which had been storing computers and monitors for many years.

A total of $2,900 was spent on the collection, including $700 on transportation, $750 for labor, pallets and Gaylord boxes, and $800 on advertising. An electronics processing firm, System Service International, processed and marketed the materials for no charge. The collection proved that a sky-high budget isn't needed to keep a community's electronics out of the landfill. The $145/ton cost for the collection was quite respectable, considering that participants would have had to pay substantially more if they had attempted to recycle the equipment on their own.

The collection generated good publicity for the County, as well, with a local television news story and a follow-up newspaper article. Each participant was given a copy of the County's recycling directory, hopefully resulting in increased awareness of the County's other recycling efforts. Jackson County plans to make the collection an annual event. For more information on this event, contact Bart Hagston, the Recycling Coordinator of Jackson County Health Dept. at 618-684-3143 x 136 or via email at bhag33@yahoo.com.

Strides in Electronics Plastics Recycling

American Plastics Council (APC) has partnered with the Minnesota Office of Environmental Assistance, Sony Electronics Inc., Matsushita Electric Corporation of America, and the Waste Management Asset Recovery Group (WM-ARG) to launch a first-of-its kind, statewide residential electronics recovery effort. The new initiative is designed to evaluate collection strategies and costs, determine transportation and processing costs, and explore market opportunities for glass from cathode ray tubes (CRTs) and plastics. In addition, APC was interested in using the project to validate previous research efforts with larger samples and assess recent technological advancements in plastics identification and separation. During the collection portion of the project, 575 tons of electronic products, defined as anything with a plug or embedded battery except major appliances, and 125 tons of packaging and shipping materials were collected. The equipment was shipped to WM-ARG for separation by product type, after which the company disassembled the products, removed hazardous materials, and created categories of potentially marketable scrap. This scrap included 61,000

Return to Vendor: A Solution to Obsolete Computer Equipment

by Alicia Culver, Senior Research Associate, INFORM

Government faces enormous costs in handling computer waste, as equipment often has to be replaced every few years. Computer owners are likely to face even higher waste management costs now that several states have moved to restrict the disposal of computer monitors (and televisions) from trash incinerators and landfills because these items contain up to 8 pounds of lead and other toxic chemicals.

The good news is that at least two strategies are emerging to help government agencies begin to manage computer waste safely while keeping it out of landfills and incinerators.

Taking their cue from "extended producer responsibility" (EPR) policies in Europe, some states are requiring computer vendors to take back their equipment at the end of its useful life. "Take-back" provisions written into computer purchase agreements can give vendors the option of accepting physical or financial responsibility — or both — for collecting and reusing, recycling, or properly disposing of their products when users are ready to discard them. From the purchaser's perspective, when recycling is paid for up-front, there is little incentive to discard or warehouse obsolete computer equipment. Purchasers can also require vendors to certify that hazardous constituents from the returned computer equipment are either reclaimed or managed as hazardous waste. And they can apply EPR to used packaging as well.

From the vendor's perspective, including the cost of recycling in the product's purchase price virtually guarantees loss of low-bid contracts unless there is a level playing field. Under a contract with take-back provisions, companies that devise strategies to cost-effectively collect, reuse, and recycle used computer equipment will gain a competitive edge.

The second strategy that returns used computer equipment to manufacturers or resellers is leasing. Under certain leasing agreements, vendors automatically take back their equipment at the end of the lease term. Leasing guarantees purchasers up-to-date technology and is catching on, in large part because of the short life span of computer equipment. According to INFORM's new report, *Leasing: A Step Toward Producer Responsibility*, "In the United States, leasing of personal computers is growing dramatically — by 149 percent between 1997 and 1998 alone. In 1998, leasing accounted for one-third of all computer transactions" (www.informinc.org/leasingbook.htm). INFORM found that leasing can stimulate computer reuse and recycling. But those effects are not automatic unless purchasers require vendors to certify that they will reuse or recycle computer equipment that is returned to them.

Take-back specifications and leasing agreements have the greatest benefit when used equipment is returned to its maker, which is best equipped to reuse its own components. These strategies also give manufacturers powerful incentives to re-design their goods to contain fewer toxic materials and to be more long-lasting, upgradable, and easily recycled.

One issue that needs to be resolved is how to best coordinate EPR specifications with donation programs so that the take-back responsibility of the manufacturer is transferred along with the equipment. In the meantime, contract language favoring companies that collect, reuse, remanufacture, and recycle obsolete computers will encourage vendors to offer these services to the public at large. When that happens, computer owners will no longer have to choose between putting computers in the trash or stuffing them in a closet until a workable solution presents itself.

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pounds of plastics, half of which was shipped to MBA Polymers, Inc., a durable plastics processor and research facility in Richmond, California, for further study. The remaining half was sold into the export market.

MBA Polymers found that televisions continue to generate the most plastic of any product type. Plastics from computers, however, are increasing, jumping from 18 percent of a previous county sample to 38 percent of the current statewide sample. This trend bodes well for recycling electronics plastics because computers are made with higher-value engineering plastics.

Another positive result of this study is that MBA Polymers accepted 100 percent of the plastics shipped by WM-ARG. In previous projects, MBA rejected as much as one- to two-thirds of plastics samples, mostly due to inadequate quality controls at the de-manufacturing level.

In just 18 months, MBA Polymers has significantly improved its ability to generate nearly pure streams of plastic from recovered household electronics. MBA expects to increase yields further as it gains familiarity with the resins and fine-tunes its separation equipment and techniques. It maintains that, given sufficient quantities, it should be able to separate other high quality plastics.

To learn more about the technical progress being made in recycling plastics from recovered residential electronics, please visit APC's website at www.plasticsresource.com.

Stepping into the Winner's Circle: Federal Prison Industries

Since early 1997, Federal Prison Industries (FPI), also known by its trade name UNICOR, has been recycling computers and other electronic items. Fulfilling FPI's mission to train inmates, FPI has been able to employ nearly 300 inmates at its three computer/electronics recycling locations: Federal Correctional Institution (FCI) Elkton, Ohio; FCI Marianna, Florida; and FCI Fort Dix, New Jersey. In just its first two years, the program processed more than 30 million pounds of electronics. By Fall 2001, FPI will be activating a fourth factory at the new United States Penitentiary in Atwater, California. FPI's efforts to help green the environment through computer/ electronic recycling for many private, public, and governmental entities continue to grow.

Early last fall, with the help of the General Services Administration, FPI and the Department of Health and Human Services (HHS) signed a Memorandum of Understanding whereby FPI will accept HHS's surplus computer and electronics equipment for recycling. With this document as a model, FPI has begun working with many other Federal and State agencies to develop recycling partnerships. UNICOR staff has met with or contacted various private sector and government agencies to find generators for incoming materials, as well as to help develop partnerships that will better handle the flow and disposition for FPI's out-going materials.

FPI enthusiastically looks forward to expanding its environmental stewardship by providing an opportunity to help others with computer/electronics recycling services. If you have computer or electronics equipment to recycle, call Larry Novicky at 202-305-3732. FPI's web site, www.unicor.gov, also provides information about Federal Prison Industries and its computer/electronics recycling program.

Note: Federal Prison Industries was a 1999 Closing the Circle Award Winner in the "Recycling Non-Hazardous Waste" category.

The 2001 National Recycling Congress is Approaching!

This year's National Recycling Congress and Exposition will be held October 1-3 in Seattle, WA. The White House Task Force on Recycling is once again partnering with the National Recycling Coalition to offer Federal-specific educational sessions. The partnership is committed to providing Federal employees with the opportunity to learn and share with Federal and non-Federal recyclers their experiences in waste prevention, recycling, and procurement of recycled content and environmentally preferable products. Here is an overview of the Federal sessions:

Biobased Products – Greener Alternatives: Speakers will discuss USDA's new biobased industrial products web site, biodiesel, and other biobased industrial products available for Federal purchase.

**Electronics Recycling Does Compute:** This session will explain Federal agencies' options for handling old computers and electronics, from disposition through the GSA Federal Property Management system to options for demanufacturing and recycling.

The Winning Edge: Representatives from selected 2001 White House Closing the Circle award-winning programs will discuss what makes their programs winners.

So How Do I Buy Green Products Anyway?: This hands-on workshop on how to prepare "green" solicitations and contracts will feature examples from actual services and construction contracts and GSA's "green" lease provisions.

Town Hall Meeting: Join us for our annual Federal community Town Hall Meeting to discuss the latest "greening the government" initiatives.

For more information, visit the Task Force's web site at www.ofee.gov or NRC's web site at www.nrc-recycle.org. We have a lot of exciting news and program ideas to share, and we look forward to meeting with you in Seattle!
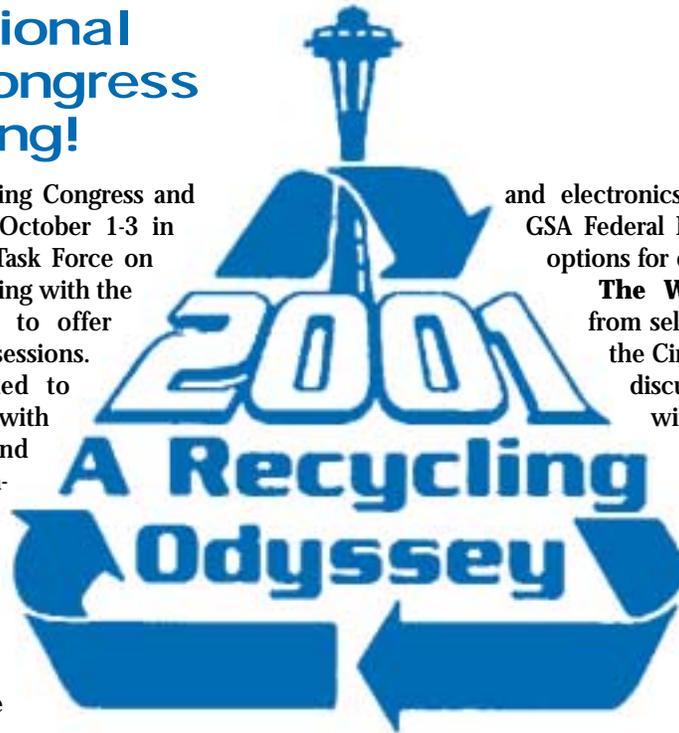
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