

**Pacific Northwest National Laboratory -- PNNL Stewardship:**  
*Conservation Through Reuse*

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**Award Category:** Waste/Pollution Prevention

**Nominee:** Team Nomination: PNNL Stewardship Team

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Community Team Members  
46 local schools/government entities

19 non-profit organizations to redistribute equipment and office products  
4 manufacturers/vendors of toner cartridges

**Nomination Abstract:**

The Pacific Northwest National Laboratory (PNNL) has integrated waste minimization and pollution prevention processes and tools into the Laboratory's Environmental Management System (EMS). PNNL with the community and other partners have avoided a total of \$2,190,774 in purchasing and waste disposal costs during fiscal year 2005. These savings were accomplished through a variety of programs, such as the reduction, reuse and recycling of equipment, chemicals, office products and construction materials.

PNNL's most recent decision to become a Partner in the Federal Electronics Challenge further demonstrates the Laboratory's commitment to sound environmental practices which have led to third party registration to the ISO 14001:2004 standard and continued membership in the US EPA National Environmental Performance Track program.

**Nomination Description:**

The Pacific Northwest National Laboratory (PNNL), a U.S. Department of Energy national laboratory operated by Battelle, not only conducts science and technology research to meet broad environmental, energy, health, and national security objectives, it also works to conserve resources and protect the environment as part of the Laboratory's routine operations. This approach has helped the Lab achieve registration of its Environmental Management System to the ISO 14001:2004 standard and obtain membership in the USEPA National Environmental Performance Track program.

In particular, PNNL has built into its Environmental Management System the principles of reduce first, find a reuse second, and, if all else fails, recycle. In line with these principles, PNNL

- Became a Federal Electronics Challenge Partner in 2005
- Seeks reuse for all types of equipment
- Has an internal chemical reuse system and is working to develop an expanded system to share excess chemicals with institutions outside of the DOE complex.
- Seeks reuse for construction materials whenever possible
- Has an Office Product Exchange to promote reuse of office products, which are excess when projects are completed

FY2005 Program Highlights

*Equipment - Electronic*

PNNL is proactively working to extend the useful life of its computers from 3 years to 6 years in order to minimize the impact of computer equipment purchases and disposal. To accomplish this, PNNL focused in 2005 on technology upgrades, such as installing larger hard drives, updating video capabilities, and adding more RAM (memory) to its older computers. In addition, PNNL rotated computers to staff whose output does not have to be compatible with specific scientific software, which also extends the useful life of a computer. Finally, PNNL used older computers for secondary purposes that require less computing power and support non-mission critical systems.

Once equipment can no longer be internally redeployed, PNNL donates the computers and other electronic equipment to local schools. In the previous 6 years PNNL donated a total of almost 1000 pieces of electronic equipment which would have cost the recipients roughly \$2.5 million to purchase new. In 2005, PNNL switched to using GSA's "Computers for Learning Program" to donate electronic equipment to K-12 schools and nonprofit educational organizations. The total donations to local schools (first half of 2005) and then through the GSA "Computers for Learning Program" (second half of 2005) were 334 computer systems and other electronic equipment at a value of \$1,483,350 if purchased new on the market.

Computer equipment is not the only equipment for which PNNL seeks reuse. We also collect cell phones to donate to the non-profit organization, Donate-A-Phone. Donate-A-Phone organized Call-to-Protect through which cell phones were refurbished and donated to agencies that deal with domestic violence. In early 2005, PNNL sent approximately 300 used cell phones to the Call-to-Protect program, which is under the Wireless Foundation. For security issues, PNNL will not be able to continue sending cell phones until our sanitation system is approved by the U.S. Department of Energy. We are continuing to collect the cell phones as well as BlackBerrys and have roughly another 300 used cell phone and 200 used BlackBerrys ready to donate as soon as allowed.

To help ensure environmentally sound disposal of these donated electronics, the lab will begin to affix the equipment with recycling instruction labels in 2006. Furthermore, PNNL is investigating schools that specialize in information technology (IT) as donation outlets for non-working computers to assist students learning to dismantle and repair broken electronics. If this endeavor is successful, PNNL expects to significantly increase its electronics donation program.

#### *Equipment - Other*

In 2005, PNNL removed an Inductively Coupled Plasma-mass spec (ICP-MS) from a lab. The ICP-MS is used to analyze samples for parts per million/billion of heavy metals, such as lead, nickel, and cadmium. The ICP-MS PNNL removed was an older unit that had been used in a hot cell but was still in good usable condition. PNNL searched for a home for the ICP-MS and found the Oak Ridge National Laboratory had some research projects in need of an ICP-MS. The cost of \$50,500 to dispose of the equipment was avoided by PNNL and Oak Ridge National Laboratory avoided \$400,000 in purchasing costs.

### *Chemicals*

PNNL has a chemical reuse process referred to as "ChemAgain." In 2005, PNNL redistributed almost 140 kilograms of chemicals for reuse within the Lab through ChemAgain. Because many chemicals are used in the course of research at PNNL, it is difficult to know with any precision the amount needed for a given experiment. This results in left over chemicals at the end of a project which normally would be disposed of as hazardous waste. By imbedding a chemical reuse system within the Lab's Environmental Management System, scientists at PNNL are able to not only save their projects money by avoiding hazardous waste costs but will also avoid the purchase costs of new chemicals. Internal redistribution of chemicals resulted in avoided hazardous waste costs of \$1,200 in 2005. Additionally the avoided purchase cost for new chemicals was \$3,631. Extension of the "ChemAgain" process to institutions outside of the DOE complex is planned for FY2006,

As PNNL moves out of facilities built in the 1940s, we seek reuse for all feasible items. For example in 2005, PNNL redistributed consumer products including over 200 liters (55 gallons) of white board cleaner; 30 liters (8 gallons) of dust oil; and 60 liters (16 gallons) of dust mop treatment to the local Benton County Fire District. The avoided waste disposal costs for PNNL were \$2669 and the avoided purchasing costs for the Fire District were roughly \$1,122.

### *Construction Materials*

The repair of a dock resulted in approximately 20 cubic yards of asphalt debris; 1.5 cubic yards of concrete debris; and 65 cubic yards of soil. The soil was used as fill, and rather than landfill the asphalt and concrete, PNNL's contractor recycled the asphalt and crushed the concrete debris for ground cover. The result was \$15,498 in avoided waste disposal cost for the asphalt and concrete.

Scrap building materials are commonly reused at PNNL. For example, one carpenter salvaged enough scrap lumber and lexan to built small shipping crates, reducing scrap disposal volumes by approximately 5 cubic feet per month.

### *Office Products*

Along with chemicals and electronic equipment, PNNL has an Office Product Exchange to redistribute office products both within the Lab and the community. Especially when a research project at the Lab is completed, the organization has new or nearly new office products available for reuse. Staff donate such products to the Office Product Exchange, which is located in a PNNL warehouse. Once a week, PNNL has a shopping day for PNNL and local non-profit organizations to fill their shopping baskets with free office products. In 2005, PNNL avoided sending 195 metric tons of office product materials to the landfill and saved both PNNL and community organizations over \$700 in avoided purchasing costs.

PNNL also sends its toner cartridges back to cartridge remanufacturers for reuse—all four of whom are small businesses, of which three of the four are women owned and two of the four are classified as disadvantaged. In 2005, the avoided disposal costs were \$4339, and the savings realized in reduced purchasing prices of remanufactured cartridges was \$137,750.

### *Partnership*

PNNL partnered in 2005 with 46 local schools/government entities and 19 non-profit organizations to redistribute equipment and office products and with 4 manufacturers/vendors of toner cartridges—all four of which are local small businesses and woman-owned or classified disadvantaged.

### *Education and Outreach*

Education of staff and outreach to our community partners is an integral part of the PNNL's culture. PNNL maintains an internal Pollution Prevention website that staff refer to for pollution prevention, sustainability, stewardship, etc. questions. Also the concept of reduce and reuse is built into PNNL's required training for staff prior to obtaining authority to use a purchase card. Outreach to the community is through our voluntary Earth Day Team Battelle, which proactively works with the community on a variety of waste reduction and reuse projects; and through science and education outreach activities. Local schools are the first contact when we have excess equipment not needed by PNNL or other federal agencies.

### Benefits

The combined cost avoided by PNNL and our community and other partners in 2005 through reduce and reuse initiatives was \$ 2,190,774. The conservation of resources and protection of the environment are an integral theme within PNNL's Environmental Management System leading to the routine reduction, reuse and recycling of materials as part of the Laboratory's routine operations. PNNL's initiatives to reduce, reuse, recycle promote the goals and objectives of both Executive Order 13101 as well as Executive Order 13148 in that they not only reduce waste but offer opportunities for others to avoid purchasing.