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National Priority Chemicals Trends Report (2005-2007)

Section 2
Progress Toward ORCR's Reduction Goal for Priority Chemicals

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SECTION 2
PROGRESS TOWARD ORCR'S REDUCTION GOAL FOR PRIORITY CHEMICALS

ORCR's Goal to Reduce Priority Chemicals in Wastes

GPRA requires all Federal agencies to publish five-year strategic plans and update them every three years with new goals. The agency's most recent five-year plan encompasses FYs 2007–2011.

As shown below, EPA has achieved its current five year GPRA goal: *By 2011, reduce 4 million pounds of priority chemicals from waste streams as measured by National Partnership for Environmental Priorities (NPEP) contributions, Supplemental Environmental Projects (SEPs), and other tools used by EPA to achieve priority chemical reductions.* EPA has set additional goals to reduce 2 million pounds of priority chemicals in FY 2011 and 3 million pounds in FY 2012.

In the past, one of the primary purposes of this Report was to track progress toward achieving this GPRA goal based solely on TRI data. We now rely on actual reduction achievements reported by the NPEP partners in measuring progress toward the goal, rather than TRI data, for a number of reasons, including: 1) TRI data were not released in time for annual performance reporting, 2) not all PCs are reported to TRI, and 3) TRI data are heavily influenced by economic conditions that affect industrial output and waste generation, which makes changes in PC quantities reported to TRI only loosely related to EPA's efforts. For these reasons, we no longer use TRI data to track progress toward achieving our GPRA goals but rather to show PC trends that can help the Agency and its partners to better focus their waste minimization efforts.

The ORCR 2011 GPRA Goal: Priority Chemical Reduction Progress under NPEP

From FY 2007 through FY 2010, NPEP partners have reduced approximately 16 million pounds of PCs. Exhibit 2.1 shows the reductions for each PC that NPEP partners have achieved from FY 2007 to FY 2010.

Exhibit 2.1. NPEP Priority Chemical Reduction Achievements through FY 2009*

Priority Chemical	Reductions Achieved (pounds)				Total Reductions Achieved (pounds) FY 2007–2010	Percent of Total Reductions Achieved FY 2007–2010
	FY 2007	FY2008	FY2009	FY2010		
Lead and lead compounds	553,831	3,845,767	6,849,711	1,708,793	12,958,102	81.8%
Naphthalene	528,607	1,187,863	52,789	0	1,773,487	11.2%
Polycyclic aromatic compounds	219,529	518,982	37,655	110,568	886,734	5.6%
Polychlorinated biphenyls	4,600	5,671	96,089	359	106,719	0.7%
Dibenzofuran	23,830	61,055	0	0	84,885	0.5%
Mercury and mercury compounds	9,603	8,744	4,228	940	23,515	0.2%
Total	**1,340,000**	**5,628,082**	**7,040,472**	**1,820,660**	**15,833,442**	**100.0%**

*These are the most current numbers according to the NPEP Program as of July 31, 2010.

NPEP partner facilities also have standing commitments to reduce an additional 2.9 million pounds of 14 PCs by 2011 (Exhibit 2.2). Please see http://www.epa.gov/epaoswer/hazwaste/minimize/npep/status.htm for further details about targeted chemical reduction commitments and achievements by NPEP partners.

Exhibit 2.2. NPEP Priority Chemical Reduction Commitments through FY 2011*

Priority Chemical	Reduction Commitments (pounds)			Total Reduction Commitments (pounds) FY 2009–2011	Percent of Total Reduction Commitments FY 2009–2011
	FY 2009	FY 2010	FY 2011		
Lead and lead compounds	81,056	936,804	2,101,208	3,119,068	97.4%
Polycyclic aromatic compounds	0	0	0	0	<0.1%
Naphthalene	10	19,239	387	19,636	0.6%
Mercury and mercury compounds	1,531	5,812	332	7,675	0.2%
Cadmium and cadmium compounds	2,742	1,401	30	4,173	0.1%
Phenanthrene	0	0	1,236	1,236	<0.1%
Pyrene	0	0	1,038	1,038	<0.1%
Hexachlorobenzene	0	0	0	0	<0.1%
Fluorene	0	0	249	249	<0.1%
Pentachlorobenzene	0	0	0	0	<0.1%
Acenaphthene	0	0	180	180	<0.1%
Anthracene	0	0	144	144	<0.1%
Dioxin and dioxin-like compounds**	22	0	0	22	<0.1%
Polychlorinated biphenyls	11	38,405	9,851	48,267	1.5%
Total	**85,372**	**1,001,661**	**2,114,655**	**3,201,688**	**100.00%**

*These are the most current numbers according to the NPEP Program as of July 30, 2010.

** Facilities report dioxin and dioxin-like compounds to TRI in grams, with a reporting threshold of 0.1 grams. For the purposes of this table, we converted the quantity reported as grams to pounds.

ORCR's Activities to Reduce Mercury

ORCR has several ongoing projects to reduce mercury. Since December 31, 2005, two of these projects have resulted in a reduction of over 48,900 pounds of mercury to date:

The Mercury Challenge

The Mercury In Schools Project

Mercury Challenge

Mercury is a highly toxic chemical that is widely present in the environment, as well as industrial facilities. NPEP is working with industry to phase out the use of mercury in their products and processes. As an added component to these partnerships, companies are encouraged to take the Mercury Challenge by submitting a goal to reduce or eliminate mercury-containing equipment. By taking the Mercury Challenge, an organization pledges to:

1) Take the Mercury Challenge Pledge to:

   Identify mercury in their facilities and in the products they make,

   Replace mercury-containing equipment with non-mercury alternatives,

   Dispose of mercury-containing equipment safely,

   Establish mercury-free purchasing policies,

   Inform and educate staff, suppliers, and clients about mercury issues and non-mercury alternatives, and

2) Implement a Mercury Reduction Plan to identify action items and timelines and help companies to measure progress towards their goals.

By eliminating mercury from their facilities, partners can reduce potential worker exposure and minimize the risk and cost of mercury spills and their subsequent cleanups, as well as save facilities the cost of disposing of mercury-containing wastes. Many current uses of mercury in products have cost effective, mercury-free alternatives. EPA also encourages mercury-containing product take-back and recycling programs.

As of July 2010, 34 NPEP partners within the NPEP program have reduced more than 39,000 pounds of mercury out of the environment. In addition, 55 partners have active mercury reduction commitments in excess of 6,000 pounds. We are continuing to recruit new facilities and encourage existing partners to identify additional ways to reduce mercury.

Schools Chemical Cleanout Campaign (SC3)

The Schools Chemical Cleanout Campaign (SC3) is designed to achieve three goals: 1) remove unneeded, inappropriate and hazardous chemicals from Kindergarten–grade 12 schools; 2) prevent future incidents through responsible chemical management, including using best management practices and finding long-term solutions; and 3) raise national awareness of the problem.

SC3 aims to ensure that all schools are free from hazards associated with chemicals, including toxic mercury, from science, art and vocational classes, as well as chemicals used to maintain and clean the school. To do this, SC3 is building a network of partners to lend their expertise and provide resources to schools. The network includes other healthy school programs within the Agency; other Federal agencies, such as the Department of Education; the chemical manufacturing industry; science associations; teachers associations; universities; hazardous waste treatment, storage and disposal facilities; community emergency responders and others who care about the well-being of children.

The first task is to inventory and clean out chemicals that clearly do not belong in schools, such as mercury. To make sure chemical problems do not re-occur, the SC3 program encourages schools to build a team, develop a chemical management plan, get support of the administration, perform regular inventories of chemicals, and institute sustainable practices, such as regular chemical management training, proper storage of chemicals and regular cleanouts.

For example, EPA Region 8 partners work with K–12 schools to address and remove outdated, unneeded, and inappropriate chemicals, including mercury. EPA and the schools work in collaboration with other technical experts to ensure that the risk of exposure to students and staff to these chemicals is eliminated. This program uses a highly collaborative process where schools are trained on how to complete accurate and useful inventories and to designate chemicals for disposal. Personnel are trained about the hazards posed by the chemicals, and proper handling of them. Hazardous waste generator status is determined with assistance from States. Schools are also assisted with obtaining cost estimates from qualified hazardous waste brokers and avenues available to assist with funding from industry and from school districts.

As of August 2010, an estimated total of 98,189 pounds of hazardous chemicals were removed from schools in EPA Region 8, 46,373 pounds of which were from schools in Indian Country. This includes an estimated total of 1,273 pounds of mercury and mercury compounds and 321 pounds of known cyanide and cyanide compounds. The effort in EPA Region 8 had a positive impact on 78,588 students (17,050 Native American students) in 227 schools, including 78 schools in Indian Country.

Other ORCR Efforts to Reduce Mercury

Universal Waste Rule: Mercury-Containing Equipment

EPA has added mercury-containing devices, e.g., thermometers and switches, to the Universal Waste Rule. For widely generated hazardous wastes, this rule facilitates entry into the hazardous waste management system, encourages recycling and keeps wastes out of the municipal waste stream.

Mercury Lamps

Fluorescent lamps, specifically compact fluorescent lamps (CFLs), are promoted as an energy-efficient lighting option, using only 20 to 25 percent of the energy required for incandescent and other lighting technologies. Installation of high-efficiency lamps reduces the demand for electricity, which in turn reduces the amount of mercury and greenhouse gas emissions from utility boilers, particularly coal-fired boilers, which produce mercury emissions from the burning of coal. Coal-burning power plants are the largest human-caused source of mercury emissions in the United States, accounting for over 40 percent of all domestic human-caused mercury emissions.

Mercury is not known to be released when CFLs are intact or in use. Most of the mercury vapor inside fluorescent light bulbs becomes bound to the inside of the light bulb as it is used. EPA estimates that the rest of the mercury within a CFL—about 14 percent—is released into the air or water when it is sent to a landfill, assuming the light bulb is broken. Therefore, if all 290 million CFLs sold in 2007 were sent to a landfill (versus recycled, as a worst case)—they would add 0.16 metric tons, or 0.16 percent, to U.S. mercury emissions.

Sales of CFLs are increasing as EPA's Energy Star program promotes their use in an effort to conserve energy (Approximately 300 million CFLs were sold in the US in 2007.). However, there are questions about available national collection and recycling options for spent lamps, and mercury exposure when lamps are broken in the home. ORCR is working to expand available CFL recycling options across the country. Specifically, ORCR is working with major U.S. retailers and lamp manufacturers and local communities,

and encourages others to join in to increase these recycling opportunities to make it easier and more convenient for all Americans to recycle their CFLs. In addition to these efforts, ORCR is also working with other EPA programs to address mercury exposure in the home, specifically how to properly clean up a broken CFL.

To support this effort, ORCR:

- Coordinates with major lamp manufacturers (e.g., Osram, Sylvania, Philips), retailers (e.g., Walmart), and non-governmental organizations (e.g., National Electrical Manufacturers Association, Association of Lamp Manufacturers and Recyclers, and other Federal agencies (e.g., United States Postal Service) to reduce the amount of mercury in lamps (5 mg mercury per 25 watt or less in lamps) and to establish a cost-effective and efficient national infrastructure for lamp collection and recycling.
- Collaborates with the Environmental Council of States Quicksilver Caucus to enhance lamp collection and recycling at the state level.
- Works with the Energy Star program to encourage recycling and to encourage the development and dissemination of information on local and regional lamp recycling and proper disposal.
- Participates in the Product Stewardship Institute National Fluorescent Lamp Dialogue to establish national lamp collection and recycling options. For more information on the options please visit www.productstewardship.us or http://productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=271.
- Established an EPA Regional lamp recycling group to coordinate lamp recycling efforts and to expand upon successful lamp collection, recycling, and outreach efforts.
- Supported Office of Research and Development's establishment of an information needs document identifying research areas for consideration in conducting an EPA – lead lamp breakage study.
- Established a tier 2 workgroup with cross-agency participation to further revise and update the CFL cleanup guidance offered on the EPA web site.
- Developed a draft communication strategy for the cleanup guidance to complement its publication on EPA's CFL web site. The strategy targets audiences most likely to be exposed to a broken CFL, with a focus on the residential environment, including multi-family units.
- Developed a brochure for residents, both single family homes and multi-family units, with information on CFL recycling, cleanup, and breakage prevention.

Dental Amalgam Waste Recycling Outreach Effort: Environmentally Responsible Dentistry

The use of dental amalgam in dentistry is widespread throughout the country, although its use is declining. The latest Agency data shows that US dentists placed 71 million amalgam restorations in 1999, and that nearly 122,000 dentists place and/or remove amalgam restorations in the US. In 2004, dental amalgam placements accounted for 26 percent of the mercury in usage in the U.S. (30.4 tons of the 116 tons used nationwide). Dental amalgam contains 50 percent by weight mercury. When dental amalgam is released to the water, this mercury fraction has the potential of being transformed into methylmercury. EPA is most concerned about methylmercury in the environment as it is a more potent and a more bio-accumulative form of mercury.

To deal with this on-going problem, many states have already mandated the use of specific technologies (amalgam separators) to control the amount of amalgam waste reaching the environment from the dental office. EPA is in the process of developing voluntary partnerships with various entities in the dental industry to promote the recycling of amalgam waste. Specifically, the ORCR has partnered with the Marquette University School of Dentistry and has completed a curriculum based module on dental amalgam recycling entitled "The Environmentally Responsible Dentist - Dental Amalgam Recycling: Principles, Pathways & Practice." This module has been designed to make student dentists more aware of the importance of recycling (and the impact of not recycling) amalgam waste generated in their offices once they begin their practices. EPA posted the module on its Safe Mercury Management Web site in July 2010. In fall 2010, Marquette University expects to post the teaching module on the American Dental Education Association's MedEd Portal so that the other 56 accredited dental schools in the United States can use the module in their curricula. EPA is also working with dental amalgam manufacturers to develop product marketing information which will assist dentists on how to properly manage any wastes generated from the use of the amalgam product.

Artisanal Gold Mining

ORCR has provided technical assistance to the Global Environmental Fund project for the last seven years on the management of mercury in artisanal gold mining. The Global Environmental Fund/United Nations Industrial Development Organization program involves the environmental monitoring of human health and the environment in six countries, as well as the introduction of alternative mining methods to reduce or eliminate the use of mercury in gold mining. ORCR is currently assisting Office of International Affairs with projects to reduce mercury emissions from "gold shops" which is where mercury gold amalgam is melted to reduce mercury content prior to resale and final refining.

Global Mercury Treaty Negotiations

In 2009, U.S. delegates endorsed negotiations for a new treaty to reduce mercury globally, changing previous U.S. policy. The United Nations Environmental Programme (UNEP) was tasked with assembling an intergovernmental negotiating committee (INC) with the responsibility of preparing a legally binding treaty. ORCR provided technical assistance to Office of International and Tribal Affairs (OITA) in developing U.S. negotiation position papers in support of INC's development of a legally binding international treaty to reduce mercury. In addition, the U.S. is a member of UNEP's Global Mercury Partnership with EPA as the lead agency. ORCR participates and provides technical assistance to Office of Chemical Safety and Pollution Prevention and OITA in support of the partnerships.

Long-term Mercury Storage

The Mercury Export Ban Act (MEBA), signed into law in 2009, will prohibit the export of elemental mercury effective January 1, 2013, and directs the Department of Energy (DOE) to designate a facility or facilities for purpose of long-term management and storage of elemental mercury. ORCR provides technical assistance to DOE to meet the provisions set forth in MEBA.

Honeywell/Thermostat Recycling Corporation collaboration with EPA and Quicksilver Caucus (QSC)

EPA and the QSC met with representatives from Honeywell Manufacturing and the Thermostat Recycling Corporation (TRC) on March 9, 2010 as follow-up to previous efforts by the TRC to improve the recycling rate of mercury-containing thermostats. EPA and the States discussed concerns about mercury as a classic PBT chemical that is particularly toxic to children; and that numerous water bodies are affected by mercury pollution across US; and that pollutant loading assessments by the states indicate that mercury inputs will need to be reduced by greater than 90 percent to restore many waterbodies.

Available data demonstrate that millions of thermostats are still hanging on walls in homes and commercial buildings and many end-of-life units are not being collected and recycled. Both EPA and the QSC have identified mercury-containing thermostats as an opportunity to improve mercury pollution prevention efforts nationally. EPA, QSC, Honeywell and the TRC agreed to a follow-up discussion to address thermostats as an opportunity with respect to mercury pollution prevention/collection efforts; alternatives; the urgency for ramping up collection programs as energy efficiency efforts are speeding up replacements; and better data/metrics to assess and track program effectiveness.