

Protecting the Great Lakes 4 million times

“Collect 1 Million Pounds of e-waste and 1 Million Unwanted Pills” was the US EPA’s 2008 Earth Day Challenge to residents, businesses and communities around the Great Lakes. Thousands of residents responded by participating in events to properly dispose of unwanted medicines and to collect and recycle electronic waste during the week of April 19 -27, 2008. The 2008 Earth Day Challenge collected the equivalent of 4,400,000 pills and approximately 4,950,000 pounds of e-waste, as reported by 23 unwanted medicine events and 33 e-waste collection events that were held around the Great Lakes (see Tables 1 & 2). The response to the call for events by the US EPA Great Lakes National Program Office was overwhelming and demonstrates the strong interest Great Lakers have in their Lakes, their communities and doing the right thing for their environment.

Why do we want to keep medicines out of the trash and our wastewater (the toilet, sink and septic)? In the United States, sales of over-the-counter medicines have increased by 60% since the 1990s.¹ In 2006, the U.S. prescription volume rose to 3.7 billion prescriptions.² With these increases come concern about the fate and effects of these compounds in the environment. Recent studies have identified a wide range of pharmaceutical chemicals in rivers and streams nationwide,³ and it has also been shown that some of these compounds are potentially harmful to aquatic organisms, affecting reproduction and development even at low concentrations.⁴ The fate of pharmaceutical chemicals in sewage sludge is also of concern, as sludge from wastewater treatment is often applied to agricultural land as a fertilizer. The long-term impacts of medicine disposal on our health and the health of the environment are not fully known. However, unless action is taken, the quantity of these chemicals reaching our waterways will continue to increase as pharmaceutical usage increases.⁵

So what can be done? Holding collection events or setting up take-back programs allow individuals to dispose of their unwanted medicines in a safe manner. As of 1996, more than half of people surveyed in a national study stated that they throw their unused medicines in the trash, while a third flushed them down the drain.⁶ While this is often a way of avoiding accidental poisonings and drug abuse, it has significant environmental impacts. Another concern is that in some cases, information left on prescription medications can lead to identity theft. At a typical collection event medicines are instead collected and sent to a licensed hazardous waste incinerator for safe disposal for both you and the environment.

¹ Ann Pistell, Maine Department of Environmental Protection. Presentation at Northeast Water Science Forum, August 9, 2007.

² “IMS Intelligence.360: Global Pharmaceutical Perspectives 2006”, IMS Health Report, February 22, 2007. http://www.imshealth.com/ims/portal/front/articleC/0,2777,6599_40183881_81567488,00.html

³ Kolpin, Dana W., et al. “Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance.” *Environ. Science and Technology*. Vol. 36 no. 6 (2002): pp. 1202-1211.

⁴ For example, see Nash, Jon P., et al. “Long-Term Exposure to Environmental Concentrations of the Pharmaceutical Ethynylestradiol Causes Reproductive Failure in Fish.” *Environmental Health Perspectives*. 112.17 (2004): pp. 1725-1733.

⁵ Illinois-Indiana Sea Grant, “Disposal of Unwanted Medicines: A Resource for Action in Your Community.” February 2008. p. 2 <http://www.iisgcp.org/unwantedmeds>

⁶ Kuspis DA, Krenzlok EP. 1996. “What happens to expired medications? A survey of community medication disposal.” *Vet Hum Toxicol*. 38(1): 48-9. Online at: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=8825752&query_hl=1&itool=pubmed_docsum

On April 26, 2008, Pennsylvania Sea Grant and the City of Erie, Lake Erie-Allegheny Earth Force, Lake Erie College of Medicine (LECOM) School of Pharmacy, and Erie Times-News in Education held a first-of-its-kind unwanted medicine collection event in Erie, Pennsylvania. Eighty-seven residents dropped off approximately 600 pounds of medicine and personal care products at the collection. Overall, 120 gallons of materials were collected, five gallons of which were controlled substances (drugs and certain other chemicals, both narcotic and non-narcotic, which come under the jurisdiction of federal and state laws regulating their manufacture, sale, distribution, use and disposal). Included in the materials were 69,232 pills of non-controlled substances, 3,839 pills of controlled substances and 384 personal care product items.

A key to the success of this first ever collection event in Pennsylvania, was a media campaign to get the word out about the collection to residents in the area. Organizers reached out to local pharmacies, the Erie Times-News, WJET-TV 24 Erie Green Campaign, Earth 911, the Interfaith Earth Healing Initiative, Department of Environmental Protection and others to provide outreach and information concerning the collection event and proper disposal of unwanted pharmaceuticals. Since April 26, 2008, pharmaceutical take back programs have been initiated in several area pharmacies in Pennsylvania.

The organizer of “Keep Unwanted Medicine out of Lake Erie”, Sara Gris , had this to say about the event: “The issue of pharmaceutical waste is a new and emerging concern in the Great Lakes region and beyond, so Pennsylvania Sea Grant wanted to get involved and give residents of Erie a safe, convenient, and environmentally friendly way of disposing of their unwanted medications. We need to do as much as we can to keep these chemicals out of our waters, not only for the safety of our own drinking water, but also for the safety of the aquatic organisms that live in our waters. Most people don’t know what to do with their unwanted medications, so a good education and outreach campaign is integral in ensuring that this important information reaches the public.”

Similar in importance to the safe disposal of unwanted medicines, is the need for proper recycling and disposal of electronic waste. E-waste contains hazardous materials such as lead, mercury, chromium, polyvinyl chlorides or cadmium that can harm human health and the Great Lakes environment. Proper recycling and disposal are necessary to avoid unwanted pollution. As technology continues to rapidly develop, many electronic devices quickly become obsolete and are replaced by newer versions. The result: an increasing number of devices containing hazardous materials end up in landfills that will eventually leach into the environment.

Strategies to decrease the amount of electronics that end up in a landfill include working to extend the life of equipment, donating the electronics or properly recycling them. Between 2000 and 2005, around 490 million personal computers were retired, and the number is expected to increase to 955 million between 2005 and 2010. In 2003, the recycling rate of electronic products was only about 10%. Thus we see increasing amounts of e-waste with only a tenth of it being managed in a way that helps to prevent pollution and promote resource conservation. In some cases, equipment may only require updates or proper service, and not replacement. The rest of the time we should consider reusing or recycling e-waste properly so that we may recover materials for re-use, save energy, and reduce the environmental costs of raw material extraction and processing as well as the costs for disposal.⁷

⁷ Illinois-Indiana Sea Grant. “What is e-waste?” *ecyclingtools.com: Green IT Resources for Business*
<http://ecyclingtools.com/>

To ensure your electronics are recycled properly, it falls to each of us to do our homework to choose a good recycler. On November 9, 2008, *60 Minutes* aired a news story entitled “Following The Trail of Toxic E-Waste” that discussed how some recyclers are not keeping their end of the bargain by properly recycling electronic waste. Instead they are illegally shipping it to other countries, in this case China. The aforementioned hazardous materials contained within these devices “‘have known toxicological effects that range from brain damage to kidney disease to mutations, cancers,’ Allen Hershkowitz, a senior scientist and authority on waste management at the Natural Resources Defense Council, explained.”⁸ The dangers to the environment and human health demonstrate the importance of choosing the right recycler. Indiana-Illinois Sea Grant has put together a website at www.ecyclingtools.com that gives advice to businesses and individuals that includes credible recyclers and disposal services. This site may also serve as a tool to communities and organizers looking for services that they can feel confident about as well as management techniques that will increase efficiency of existing computers.

The City of Milwaukee’s Department of Public Works, in conjunction with Keep Greater Milwaukee Beautiful, Midwest Computer Recyclers and other partners, took up the Earth Day challenge and organized an unwanted household electronics event. During this one-day event, 706 vehicles dropped off electronic items, totaling 63,497 pounds (just under 32 tons) of e-waste. Keep Greater Milwaukee Beautiful provided 44 volunteers and greatly assisted with coordinating efforts. WISN Channel 12, a local news station, aired service announcements to residents prior to the event to boost participation, and Midwest Computer Recyclers handled all of the e-waste at 50% off their regular costs for collection and recycling.

The City of Milwaukee currently runs a program that accepts computer electronics for recycling at two Department of Public Works drop-off sites. The Earth Day collection event, however, allowed residents to drop off television sets, which normally would not be accepted because of limited funding for the on-going program. “We are extremely grateful for the U.S. EPA’s grant funding that made this event possible and allowed us to provide Milwaukee residents with an opportunity to recycle their old TV’s” said Rick Meyers, recycling specialist at the City of Milwaukee Dept. of Public Works. This is a key time to collect old TVs as many people are purchasing new TVs in response to the switch from analog to digital signals that will occur nationally on February 17, 2009. It is estimated that millions of television sets will hit the trash preceding this change.

The goal of the Earth Day challenge was to increase awareness and inspire individuals to rethink their lifestyle choices to account for the effects they may have on the environment and their community. The willingness of residents from various Great Lakes’ states to participate in the challenge demonstrates increasing awareness of these issues. Reports from many Great Lakes basin collection events thus far, show numbers that far exceed the initial challenge goal of one million pills and one million pounds of e-waste (see Graph 1). Table 1 shows the results of unwanted medicine collections, while Table 2 shows results from e-waste collections; all of which received funding from the U.S. EPA. With the equivalent of over 2.2 million pills collected, we see that with just 17 events we already exceeded the initial goal of one million pills, and the 16 electronic waste collection events made up over half our goal of one million pounds. U.S. EPA funded events only make up a fraction of the events that took place in response to the Earth Day challenge, which serves as a reminder to others interested in holding their own events that every collection makes a difference.

⁸ CBS 60 Minutes, “Following The Trail of Toxic E-Waste: 60 Minutes Follows America’s Toxic Electronic Waste As It Is Illegally Shipped To Become China’s Dirty Secret.” Nov. 9, 2008. Online at: <http://www.cbsnews.com/stories/2008/11/06/60minutes/main4579229.shtml>

In addition to answering the challenge call and exceeding expectations, many of the event organizers and partners have put great effort into creating ongoing programs and/or have inspired plans for future events. For instance, Milwaukee Metropolitan Sewerage District (MMSD) hosted their 3rd annual Medicine Collection Day and plans to host at least two other events for 2009. The Western Upper Peninsula District Health Department's RSVP (Retired and Senior Volunteer Program) also went above and beyond, hosting five e-waste collections for regional communities between June 1, 2008 and October 4, 2008. Some organizers have also taken advantage of popular internet sites such as YouTube, to publicize the successes of their events. The MMSD, the City of Milwaukee, Cuyahoga County in Ohio, and the Western Lake Superior Sanitary District in Duluth, Minnesota are just a few of the organizers whose events are currently up on YouTube.

If you are interested in holding your own collection event in the future or are looking for ideas, Illinois-Indiana Sea Grant (IISG) has put together a toolkit entitled "Disposal of Unwanted Medicines: A Resource for Action in Your Community." This toolkit focuses on collection events for the public as a partial solution to the problem. To assist event organizers, a set of case studies and sample educational materials along with the Northeast Recycling Council's step-by-step advice for running a collection are provided. Background information on the science behind the issue and a bibliography of news stories and articles from scientific journals are also included. The IISG toolkit is available online at www.iisgcp.org/unwantedmeds. For more information about the toolkit or recyclingtools.com website, contact Elizabeth Hinchey Malloy, 312-886-3451, hinchey.elizabeth@epa.gov. For further information on any of the 2008 Earth Day collection events funded by U.S. EPA, contact John Haugland, 312-886-9853, haugland.john@epa.gov.

**Table 1 - U.S. EPA funded Unwanted Medicine Collection Events
resulting from Earth Day**

<u>Organizer</u>	<u>Location</u>	<u>Approx. Pill Count</u>	<u>Participants</u>
IL EPA	Chicago, IL	10,000	N/A
City of Chicago	Chicago, IL	20,000	N/A
*Macomb County Health Department	Macomb County, MI	60,700	N/A
Ingham County Health Department	Ingham County, MI	N/A	N/A
Charter Township of Bloomfield	Bloomfield Hills, MI	92,400	613
^ Kalamazoo Co Health and Community Services Dept.	Kalamazoo County, MI	975,000	751
*Bay County Health Dept.	Bay City, MI	128,000	N/A
*Greater Detroit Resource Recovery Authority	Detroit, MI	800	997
*Western Lake Superior SD	Duluth, MN	104,600	402
^Monroe Co/CEI	Rochester, NY	126,000	N/A
Keep Western New York Beautiful	Buffalo, NY	N/A	N/A
Richland County Regional SWMA	Mansfield, OH	N/A	N/A
City of Cleveland	Cleveland, OH	64,000	N/A
PA Sea Grant	Erie, PA	73,071	87
**Milwaukee MSD	Milwaukee, WI	36,831	2,348
City of Green Bay Economic Development Dept.	Green Bay, WI	581,000	300
UW Extension	WI	N/A	N/A
TOTALS:		2,272,402	5,498

* 200 pills=1lb

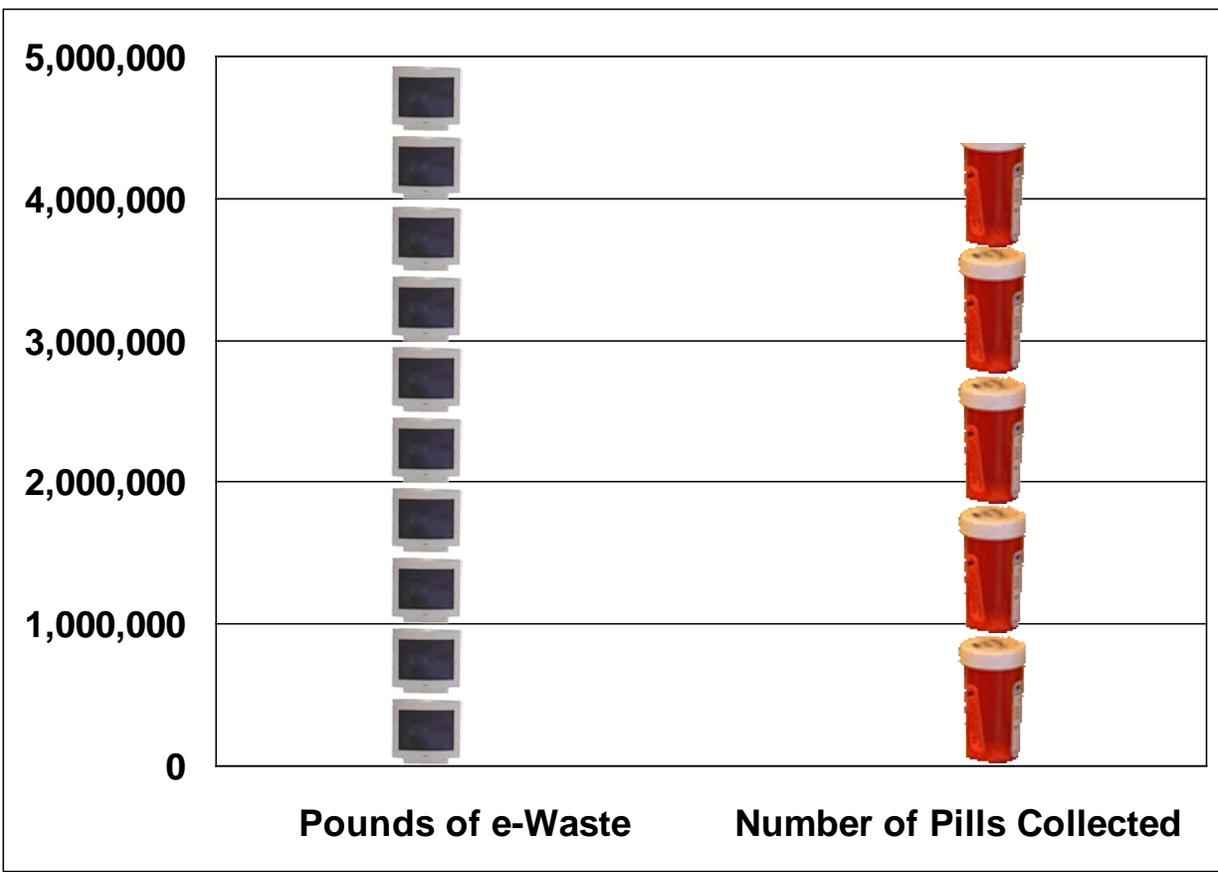
**This value represents controlled substances collected in Milwaukee Co. only. Non-controlled substances and other counties results were reported in either pounds or gallons. A total of 7,013 lbs of non-controlled substances were collected. For controlled substances Racine Co., Washington Co. and Ozaukee Co. collected 50lbs., 83 lbs. and 90 gallons respectively.

^ The data represent more than one event.

**Table 2 - U.S. EPA funded Electronic Waste Collection Events
resulting from Earth Day**

<u>Organizer</u>	<u>Location</u>	<u>Pounds of e-waste</u>	<u>Participants</u>
City of Chicago	Chicago, IL	75,000	N/A
Allen County SWMD	Fort Wayne, IN	200	70
Macomb County Health Department	Macomb County, MI	35,471	N/A
Ingham County Health Department	Ingham County, MI	N/A	N/A
Charter Township of Bloomfield	Bloomfield Hills, MI	56,341	613
Little Traverse Bay Band of Odawa Indians	Harbor Springs, MI	11,406	N/A
Bay County Health Dept.	Bay City, MI	44,512	N/A
Antrim Conservation District	Bellaire, MI	3,000	N/A
Western UP Peninsula District Health Dept.	Western UP District, MI	54,000	486
Greater Detroit Resource Recovery Authority	Detroit, MI	19,599	997
**NW Regional Planning Commission	Spooner, MI / WI	1,403 items	N/A
Onondaga Co.	Syracuse, NY	97,080	964
*Monroe Co/CEI	Rochester, NY	42,000	N/A
Keep Western New York Beautiful	Buffalo, NY	N/A	N/A
Richland County Regional SWMA	Mansfield, OH	N/A	N/A
City of Milwaukee	Milwaukee, WI	63,497	706
TOTALS:		502,106	3,836
<i>*Data represents more than one collection event</i>			
<i>**Data represents number of items including VCRs, Printers, Stereos, TVs, Computers, Hard Drives, Monitors, Copiers, Cell phones(5) and other devices</i>			

2008 Challenge Collection Event Results



The data includes amounts that have been reported since Earth Week (April 19th - 27th) from various collection events in the Great Lakes Basin.*



Organizers and volunteers from the City of Milwaukee Department of Public Works and Keep Greater Milwaukee Beautiful came together to take up the 2008 Earth Day Challenge (photo credit Rick Meyers, City of Milwaukee Dept. of Public Works).



Forty-four volunteers from Keep Greater Milwaukee Beautiful helped man the collection event, during which 706 vehicles dropped off over 63,000 pounds of electronic waste (photo credit Rick Meyers, City of Milwaukee Dept. of Public Works).



Pharmacists from the Lake Erie College of Medicine (LECOM) School of Pharmacy are midway into sorting through the over 600 pounds of medicines and personal care products that were collected (photo credit Sara Gris , Pennsylvania Sea Grant).