

2. Unwanted Medicine Take-Back Programs: Case Studies

Collection programs are aimed at reducing the quantity of unused unwanted medicines entering the environment and reducing the amount of drugs available for diversion, theft, or accidental poisoning. These initiatives provide the legal framework and the logistic resources required to allow the general public to turn in unwanted medicines to be disposed of safely (most of the programs described here use hazardous waste incineration with emissions controls for most non-controlled medicines, while law enforcement normally incinerates controlled substances with other confiscated materials).

Typically, collections for household medicines accept unwanted or expired medicines, including both prescription and over-the-counter medicines. These collections are beneficial because:

- Unwanted medicines accumulating in the household present a public safety hazard;
- Diverting medicines from the toilet or trash can decrease the environmental pollution from wastewater treatment discharge and unlined solid waste landfills;
- Collections help educate the general public about the environmental impact of improper medicine disposal
- A collection program provides the opportunity to inventory unused drugs and can yield wastage data that could prove valuable to physicians in better managing their prescribing practices.

Several states, cities, and counties throughout the United States have successfully initiated long-term unwanted medicine collection programs, while others have organized single-day or annual collection events. Some programs have been specifically dedicated to collection of household medicines only, while others have accepted unwanted medicines as part of a larger household hazardous waste collection program.

There is a clear need to transfer knowledge about methods of addressing the issue of unwanted medicine collection and disposal among parties who might organize collection programs. This section contains a set of case studies of medicine collections that serve as models for future action throughout the United States. Following those are descriptions of three established large-scale take-back programs from other countries that have addressed much larger audiences.

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See www.iisgcp.org/unwantedmeds for more case studies

Alachua County, Florida

Program Overview: In the spring of 2004, the Alachua County (population 220,000) Environmental Protection Department (ACEPD) collected unwanted residential pharmaceuticals at 12 locations (pharmacies, clinics, and county facilities). The five-month, grant-funded collection program included prescription drugs, chemotherapy agents, and over-the-counter medications that were expired, damaged, no longer needed, or were otherwise unusable for their intended purpose. Only products in pill, capsule, or liquid form were collected. At collection locations, residents were asked to empty their medications into a collection container and then take home the empty containers. The collection container held a dilute acid to render the drugs unusable.

Additionally, a comprehensive advertising campaign was implemented to inform residents of the pharmaceutical waste collection project. Included in the media campaign was:

- Disbursement of a press release to all local media outlets
- A public service announcement
- Advertising in the Gainesville Sun and the Senior Times newspapers
- A Weather Channel Crawl on the local Cox cable system
- Printing of a point of purchase flyer
- Posting on the Alachua County web page
- Posting on the Earth 911 website

Sites: Twelve locations throughout Alachua County participated in the collection project. In selecting locations, the organizers aimed to include the county's smaller cities as well as locations within the city of Gainesville where the largest number of potential participants reside. Drop-off locations included the Alachua County Household Hazardous Waste Collection facility, the Alachua County Fire Rescue Department warehouse, pharmacies, and health department clinics.

Key Motivation: The pilot project collected unwanted and expired pharmaceuticals in an effort to (1) prevent second-hand use of prescription drugs, (2) reduce identity theft, and (3) prevent water supply contamination. The intent of the project was to make residents more aware of the potential negative impacts of improper disposal practices and to determine the effectiveness of a local program to collect and properly dispose of unwanted medicines. This pilot project aimed to establish a model for a safe, simple collection program that has a positive impact on the community and a diminished negative impact on the environment at a relatively low cost.

Organizing Body: The unwanted medication take-back pilot was primarily organized by the Alachua County Environmental Protection Department (ACEPD).

Partners: The Florida Department of Environmental Protection, the Alachua County Household Waste Collection facility, Fire/Rescue personnel, various pharmacies, and health department clinics also offered assistance.

Level of Implementation: This program was enacted at the county level.

Cost: The pilot project was funded by a matching grant from the Florida Department of Environmental Protection. The final budget for the pilot project was \$15,944; the breakdown of expenses incurred in the project is as follows:

- Total personnel expenses (including salaries, etc.) = \$9,384
- Professional services (drum disposal costs) = \$550
- Promotional activities and advertising = \$4,643
- Operating expenses (drums, pails, funnels, labels) = \$1,367

Outcome: During the pilot project, a total of 305 pounds of pharmaceutical waste was collected and shipped to a hazardous waste disposal facility for incineration. An estimated 500 residents participated in the project.

Long-term Actions: The Household Hazardous Waste Collection facility continued to collect the medications after the five-month pilot as part of their existing program.

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Clark County, Washington

Program Overview: In late 2003, Clark County, Washington, (population 380,000) established a program to safely dispose of unwanted or outdated medications. The county-funded program is called the Unwanted Medications Take Back Program. Many of the county's pharmacies are participating in the program (Clark County has 60-70 pharmacies). Residents can drop off unwanted pharmaceuticals at participating pharmacies at no charge if the medication is:

- Not a controlled substance;
- In the original container with the name of the medicine clearly marked;
- In a sealed container that does not leak;
- In a container that has all patient information either removed or crossed out.

Pharmacies put the collected pharmaceuticals into a shipping container. When the container is full, pharmacies notify the county and ship the materials to the county's hazardous waste contractor for incineration. The county pays for the shipments by allowing pharmacies to charge the shipment to its FedEx account number.

Pharmacists can refuse any patient return, as long as they tell the patient why the return was refused. For example, pharmacists will not accept leaking containers and controlled substances. When a product is refused, the pharmacist directs the resident to the county household hazardous waste program or to the sheriff.

Clark County tells residents to check with a doctor or pharmacist to determine if their drug is a controlled substance. Residents are instructed to bring controlled medicines to any of four local police and sheriff's offices, where each controlled substance is heat-sealed in a plastic bag and secured in a locked container until it is shipped off-site for disposal with drugs collected by the sheriff as evidence in criminal cases.

Additionally, Clark County has been taking back non-controlled consumer drugs for approximately 12 years at three household hazardous waste (HHW) facilities. The state also offered a pharmaceutical waste training program in October 2003.

Collection Sites: Collection of unwanted and expired medicines occurs at 47 pharmacies, two sheriff's offices, and two police departments. For a list of participating pharmacists, police stations and household hazardous waste collection facilities, visit <http://www.clark.wa.gov/recycle/a-z/materials/drugs.html> or call (360) 397- 6118 ext. 4352 and ask for a copy to be mailed to you. Their program brochure can also be downloaded at www.clark.wa.gov/recycle/publication.html.

Key Motivation: The Medications Take Back Program began in 2003 after proper drug disposal was recognized as a leading environmental issue. Clark County has been primarily motivated by the potential environmental threat posed by discharging pharmaceutical products to the environment.

Organizing Body: The HHW and pharmacy take-back program was the result of the combined efforts of all local pharmacies, the state board of pharmacy, the Drug Enforcement Administration (DEA), and the county sheriff's office.

Partners: Pharmacies, County Sheriff, Household Hazardous Waste Collection program

Level of Implementation: This program was implemented at the county level, although it required statewide cooperation.

Cost: The costs of this program were absorbed through public programs and the local pharmacies.

Outcome: The total weight and number of pills collected is not known. However, it has been documented that 23 lbs. of *controlled* pharmaceuticals were collected in 2006.

Long-term Actions: This program is available every day.

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Kendall County, Illinois

Program Overview: Kendall County has developed an ongoing collection program to allow residents to dispose of unused drugs safely year-round rather than requiring them to wait for a single-day collection event. Medicine drop-offs are accepted daily at the Yorkville police department, which is centrally located in the county. The program is available from 8 am to 5 pm every Monday-Friday starting July 2, 2007. Because the collection takes place under the supervision of law enforcement, both controlled and non-controlled medicines can be accepted.

On an as-needed basis, the Yorkville Police Department will request the pharmacists' expertise in segregating the controlled from the non-controlled substances. The non-controlled will be packaged in containers supplied by Illinois EPA, who will coordinate pick-up with their HHW contractor. The controlled substances will be destroyed by the Yorkville Police Department along with the other contraband collected during normal law enforcement operations.

The collection was initially publicized through organizations such as senior citizens' groups including the Kendall County TRIAD and Health Department's senior programs. The program was phased in with these organizations first and then expanded to the community at large via TV and newspaper advertising. Newspaper articles in the *Aurora Beacon News* and *Kendall County Record* were used to open the program to the general public. A talk-radio program on WSPY and TV program on WAUR channel 30 were also used to further publicize the collection. Fortunately in Kendall County all advertisement time was donated by the respective stations or papers.

Additionally, Kendall County [adapted the informational trifold brochure](#) developed by Illinois-Indiana Sea Grant. These brochures were distributed at local Senior Centers and at the Health Department.

Collection Site: Police Station

Key Motivation: The Yorkville Police Department and the County were pursuing a collection at the same time. The County's main goal was to protect the environment and the Yorkville Police Department's main goal was to help seniors dispose of unwanted medications properly.

Organizing Body: Kendall County Health Department and Kendall County TRIAD.

Partners:

Yorkville Police Department

Illinois EPA

Oscor Drug

Kendall County State's Attorney's Office

Illinois-Indiana Sea Grant

Illinois County Solid Waste Management Association

Yorkville-Bristol Sanitary District

Radio station WSPY

Television station WAUR

Aurora Beacon News and *Kendall County Record* newspapers

Level of Implementation: The collection was organized at the county level but is intended to serve out of county residents as well.

Cost: Illinois EPA provided for the transportation and disposal of the collected non-controlled medicine waste. (In 2007, the Illinois Environmental Protection Agency offered to fund transportation and disposal of non-controlled medicines collected through county-organized collections.)

Osco Pharmacy provided an in-kind donation of its pharmacists' time and expertise.

The Yorkville Police Department provided the in-kind donation of its building and officer time to hold the collection and also provided safe and secure disposal of controlled medicines.

Publicity was aided by donations of advertising time on radio station WSPY and television station WAUR and articles in the *Aurora Beacon News* and *Kendall County Record* newspapers.

Funding for designing and printing brochures came through Illinois-Indiana Sea Grant.

Outcome: Collection statistics are not yet available (collection began July 2007).

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La Crosse, Wisconsin

Program Overview: La Crosse County solid waste managers developed an innovative plan for disposing of households' unneeded medicines, including controlled substances. Four staff members from the solid waste department have been conditionally deputized by the county sheriff to receive controlled medicines *strictly for the purpose of safe disposal and for drugs from schedules II, III, IV, and V* (i.e. prescription medicines, but not schedule I, which includes recreational drugs). The deputation is temporary, lasting until 2011, and can be renewed. It specifically outlines the authority of the staff: they are not authorized to perform other law enforcement activities such as making arrests, and they are not eligible to be called up to serve as law enforcement in emergency situations the same way the county sheriff's police are. La Crosse County sought and obtained approval for the deputation from the state DEA in order to ensure compliance with the law. A copy of the agreement language follows this case study.

La Crosse County residents can drop off all of their unneeded household medicines for free at the county's hazardous materials facility. The program is also available with a small fee to residents of other counties and to businesses that qualify as VSQGs (very small quantity generators of hazardous waste). These may include nursing care facilities, public health departments, and schools. The facility is open for drop-offs every Wednesday and every other Saturday and by appointment on Tuesdays and Thursdays.

Program participants bring their medicines to the facility where staff inventory the controlled substances and then supervise the residents dropping the medicine through a funnel into a 55-gallon drum of solvent. The drum contains naphtha and ipecac to deter diversion of the discarded drugs as well as water to dissolve the medicines. Program organizers state that within approximately two days, the drugs are completely dissolved, leaving a brown, gooey residue.

The DEA does not require inventorying of the collected medicines. However, the county's hazardous waste contractor, Veolia, requested that an inventory be kept of the drum's contents to ensure that appropriate disposal methods are used.

When the drum is full, it is transported using a La Crosse County vehicle and accompanied by two deputized staff to Veolia's hazardous waste incinerator near St. Louis, MO for disposal. Program organizers estimate that this will be necessary approximately once or twice per year.

The event was publicized via promotional flyers, which are being distributed to customers at local pharmacies. La Crosse County also runs radio ads for the program year-round.

Collection Site: Collection takes place at the county's hazardous materials facility, which has served in the past as the drop-off point for other materials such as paints, pesticides and electronics. The facility is centrally located in the county and is easily accessible from the interstate and other major highways in the county.



Key Motivation: The program was started due to concerns about environmental impacts of medicine waste as well as to protect against accidental poisoning and drug abuse. La Crosse County Solid Waste managers developed a way to controvert the conventional wisdom that has said that it "can't be done" under the existing rules. They have found a way to meet regulatory requirements, accept controlled substances, ensure that all collected material is incinerated at a licensed facility, provide service to businesses, and provide permanent, year round collection.

Organizing Body: La Crosse County Solid Waste Department

Partners: La Crosse County Sheriff's Office
La Crosse area local pharmacies
Franciscan Skemp Medical Center
La Crosse area US Fish & Wildlife office

Level of Implementation: The collection was organized at the county level.

Cost: Veolia charges La Crosse County a disposal fee of \$650 per drum of medicine waste. Additionally, Veolia charges a \$1,800 witnessed burn fee for disposal of these medicines since it must move the drum of medicines to the front of its line and destroy them immediately upon receipt.

Other costs included \$2,000 to print 160,000 flyers publicizing the event.

The total annual cost including staffing is estimated to be \$12,000-\$15,000. Currently, these costs are being covered by the solid waste department's regular operating budget; they have not received additional operating funds for disposal or for salary to staff the operation. La Crosse County is raising \$25,000 to cover startup costs including advertising, printing, and additional security at the facility (cameras, active system, etc). Future costs will be partially offset by revenue generated by providing disposal services to area VSQGs.

Outcome: The program has been in operation for approximately one month. Participation is increasing as more people hear about the program. Area VSQGs and other counties have expressed interest in using this disposal method.

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County of La Crosse, Wisconsin
Courthouse & Law Enforcement Center • 333 Vine St • Rm 1500
La Crosse, Wisconsin 54601-3296
Administrative Calls: (608) 785-9629 • Fax: (608) 785-5640
Non-Emergency Dispatch: (608) 785-5942
Web Site: www.co.la-crosse.wi.us

STEVEN J. HELGESON
SHERIFF

JEFFREY A. WOLF
CHIEF DEPUTY

As an employee of the La Crosse County Household Hazardous Materials Program, you are conditionally deputized for the sole purpose of collecting and properly disposing of Schedule II, III, IV, and V medications while on duty.

The conditional appointment to the position of Deputy Sheriff does not grant you the power of arrest or the authority to possess or carry a firearm or any other weapon in a manner that is not permissible by statutes for a non-deputized citizen.

This conditional deputation expires January 2, 2011 or immediately upon termination of employment with the Household Hazardous Materials Program. The Sheriff also has the discretion to rescind the deputation.

I understand the above information and agree to abide by the provisions.



Signature of Employee

JEFF GLOYD

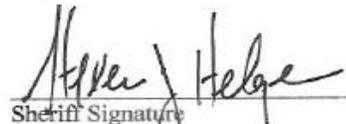
Printed Name

Special Waste Manager

Title

5/24/07

Date



Sheriff Signature

5-24-07

Date

Olmsted Falls, Ohio

Program Overview: The City of Olmsted Falls, Ohio (population 8,600) developed a medication disposal program in conjunction with a nearby hospital, Southwest General Health Center (354 beds). The Medication Disposal Program was launched in April 2006 as a pilot program. If there is continued interest, the hospital may expand participation to neighboring communities.

The program allows individuals to drop off outdated or unwanted medications at Southwest General Health Center's Protection Services Office (security office). The office is staffed 24 hours a day, 7 days a week. The hospital will accept non-prescription (OTC), prescription, and pet medications, as well as pills, ointments, liquids (the bottle must be placed inside a sealed plastic bag), and lotions. However, controlled substances are not accepted. The health center also cannot accept syringes, asthma inhalers or other drugs in aerosol canisters, or chemotherapy drugs. After collection, a professional medical waste handler processes the drugs safely in accordance with Ohio law.

Special 28-gallon collection containers are used to store the drugs until the medical waste handler picks them up for processing. The containers are located in a secure area of the security office.

If individuals are unable to drop off the medications themselves, they can call Southwest General's Health Connection. This health information and referral service will arrange a pick-up by a community volunteer.

Program planners developed a [trifold brochure](#) introducing the issue of medicine disposal and publicizing the program (included in [section 4](#) of this resource kit).

Sites: Medications can be dropped off at the Protection Services Office at Southwest General Health Center between the hours of 7 a.m. and 8 p.m. every day.

Key Motivation: The main motivators for this collection program are:

- 1) To get old medicines out of the home medicine cabinet in order to avoid dosing errors and attempts at self-medication with out-of-date drugs, especially among senior citizens;
- 2) To get old medicines out of homes to avoid accidental poisonings, especially among children;
- 3) To reduce the potential for intentional abuse of medicines;
- 4) To dispose of medication responsibly and keep it out of landfills and the water supply, where it can cause harm to wildlife and the environment; and
- 5) To safeguard patient privacy by keeping medication vials out of landfills, where personal information could be discovered;
- 6) To further enhance and extend the Health Center's commitment to recycling efforts and community health and well-being. The hospital already sponsors a yearly collection program for mercury thermometers, and saw this program as another opportunity to serve the community.

Organizing Body: The pharmaceutical disposal program is primarily run by the Southwest General Health Center in partnership with the City of Olmsted Falls.

Partners: University Hospitals of Cleveland also assisted in the development of this program.

Level of Implementation: This collection program is implemented at the local level, primarily for residents of Olmsted Falls, OH, and the surrounding suburbs. This was started as a pilot program, and organizers hope that other communities will become involved this year.

Cost: Staff members of the hospital worked with a city councilman and a volunteer member of the community to develop, implement and promote the program. The hospital absorbed the costs of the brochure printing and the disposal costs of the medications collected. There is a \$60 flat fee to dispose of each container.

Outcome: The program is ongoing; collection statistics are not available at this time.

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Prescription Pill and Drug Disposal Program (P²D²), Pontiac, Illinois

Program Overview: The P²D² program developed out of a research project undertaken by Pontiac Township High School Ecology students about the disposal of unwanted medicines. The project quickly expanded to Illinois Studies classes. The students undertook a multi-faceted campaign to provide their community with safe medicine disposal options and partnered with local pharmacies in Livingston County, Illinois. The program adapted and evolved as they looked for sustainable approaches for their community. The program has since grown to include pharmacies in 25 Illinois counties, Washington, Texas, Wisconsin, and Michigan.

The students developed collection bins, billboards, press releases, and contacted many federal, state, and local officials to help encourage local communities to reduce the amount of unwanted medicines being thrown away inappropriately and ending up in Illinois waterways.

Illinois-Indiana Sea Grant works with communities that want to join the P²D² network by providing information needed to undertake safe and legal medicine collection programs and providing funding for program advertisements and for communities to purchase safe medicine collection bins for police stations.

The P²D² network also works with the state of Illinois to identify and coordinate collection programs state-wide. The State provides funding for disposal and transportation of unwanted medicines through state contracts with hazardous waste haulers. IL-IN Sea Grant has provided funding for collection bins for police stations and some advertising (billboards, flyers). Pharmaceuticals that are collected by the P²D² program are sent for incineration in a hazardous waste incinerator.

Sites: For a searchable map of collection programs in counties throughout Illinois, please visit <http://www.epa.state.il.us/medication-disposal/locations/index.html>. The P²D² program continually updates Illinois EPA to keep this map current.

This is a typical list of items accepted through the P²D² Program at local Pharmacies:

Items Accepted at Pharmacies

- Prescription medications (except controlled*)
- All over-the-counter medications
- Medication samples
- Pet Medications
- Vitamins & Supplements
- Medicated ointments, lotions, creams, and oils
- Liquid medication in leakproof containers
- Homeopathic Remedies
- Suppositories

Items Not Accepted at Pharmacies

- Needles/sharps (including syringes)
- Thermometers
- Controlled prescriptions
- IV bags
- Bloody or infectious waste
- Personal care products
- Empty containers
- Hydrogen Peroxide

Items Accepted at Police Departments (look to map for your area)

- Controlled Substances

Key Motivations: The purpose of the P²D² program is to provide students with the opportunity to act as a catalyst for change in their community. Through this program, students educate themselves on environmental protection and the dangers of drug abuse, while at the same time partnering with government agencies and grassroots campaigns to eliminate drug abuse, diversion of substances and environmental degradation.

Organizing Body: Pontiac Township High School (including instructors Paul Ritter, *Ecology class* and Eric Bohm, *Assistant Principle*)

Partners: Illinois-Indiana Sea Grant, Prairie Rivers Network, Illinois Environmental Protection Agency, Illinois American Water (water treatment plant), Walgreens of Pontiac, Doc's Drugs, Sartoris Super Drugs, K-mart in Pontiac, Pontiac Police Department, local government officials and many others.

Cost: Program costs vary by community. Currently either the pharmacy or IL EPA is paying for the disposal on non-controlled substances. In some cases IL-IN Sea Grant has purchased the secure collection bins for police stations and provided funding for program advertisement through billboards, flyers and radio advertisements.

Outcome: As of November 2009 the state of Illinois, including counties that have initiated P²D² collection and education programs, has collected and disposed of over 87,500 pounds of pharmaceuticals.

Long-term Actions: P²D² Program Coordinators will continue operating in counties and states that have already adopted the program, and hope to eventually educate and engage communities on a national level.

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Southern California

Program Overview: The City of Los Angeles, Los Angeles County Sanitation Districts, and Orange County Sanitation District launched a new public education campaign to address disposal of household medications in Southern California. The campaign's tagline, *No Drugs Down the Drain*, is meant to encourage Southern California residents to dispose of their unneeded medicine in ways more appropriate than flushing it down the toilet.

The primary element of the program is a [two-sided, bilingual postcard](#) that alerts Southern California residents to the problems associated with flushing unwanted and expired medications down the toilet or drain. As alternatives, the program recommends taking them to a household hazardous waste collection center/event (no controlled substances are allowed) or disposing of them in the trash in a sturdy and secure container, taking precautions to avoid accidental ingestion by children and animals and to prevent diversion for illicit uses. The card was developed with input from a broader group interested in residential pharmaceutical disposal including city, county, state, federal, and private participants. The card is included in [Section 4 of this resource kit](#)—“[Public Education/Outreach Materials-Models.](#)”

The program kicked off on March 19, 2006 to coincide with National Poison Prevention Week. Cards in lots of 1,500 - 2,000 were sent to approximately 1,900 pharmacies in Los Angeles and Orange Counties with a request to distribute the cards to customers as prescriptions are filled. Cards are also being handed out at Household Hazardous Waste Centers/Events (see sites below) and at agency outreach functions, and were made available to Los Angeles County Public Works for their public counters and to Los Angeles County Health Services for their clinics. Additionally, more than 25% of the cities in Los Angeles County (apart from the City of Los Angeles who is a primary sponsor of the program) have requested cards to distribute to their residents either at public counters, city events, or through direct mailings. As of August 2006, the City of Los Angeles, Los Angeles County Sanitation Districts, and Orange County Sanitation District had distributed approximately 3.7 million cards.

There is an associated website (www.nodrugsdownthedrain.org) to provide more detailed information on the program such as why flushing is a problem, household hazardous waste collection event links, discussion of controlled substances (which will not be accepted at the household hazardous waste events because of Drug Enforcement Administration requirements), tips on how to more safely dispose of medications in the trash, etc.

The disposal options outlined in the *No Drugs Down the Drain* program have been determined by the wastewater agency sponsors from Los Angeles and Orange counties to be appropriate in the geographical areas for which these sponsors have oversight. These options may not be feasible for other areas because of technical, economic, or institutional reasons.

Los Angeles County Sanitation Districts and Orange County Sanitation District conducted follow-up surveys of pharmacies. The response rate to Los Angeles County Sanitation Districts was approximately 12% and was overwhelmingly positive with approximately 92% indicating that they would participate again next year.

Collection Sites: Unwanted medications are accepted at household hazardous waste collection events in Los Angeles and Orange counties. Ultimate disposal is via incineration as hazardous waste.

The Los Angeles County Sanitation Districts and Los Angeles County Department of Public Works co-sponsor mobile collection events, which are scheduled in different areas throughout the county each weekend. They are free, open to all Los Angeles County residents, and are usually held on Saturdays from 9 a.m. to 3 p.m. An appointment is not needed to participate in a collection event. Visit http://www.lacsd.org/info/hhw_e_waste/default.asp or <http://ladpw.org/epd/hhw> for additional information.

Additionally, the City of Los Angeles has established six permanent collection sites throughout the City, known as S.A.F.E. (Solvents/Automotive/Flammables/Electronics) Centers. The Bureau of Sanitation also sponsors periodic mobile collection events throughout the City. Both the permanent and mobile events are free, open to all Los Angeles County residents, and accept medications. Visit http://www.lacity.org/san/solid_resources/special/hhw/ for more information.

Other cities in Los Angeles County have established residential HHW collection programs, however, not all of them will accept medications. Contact information for these cities is listed at http://ladpw.org/epd/hhw/local_city_collection.cfm, and individual cities should be contacted to determine if unwanted medications are accepted.

There are four permanent Household Hazardous Waste collection centers in Orange County which accept medications from Orange County residents. They are free, open to Orange County residents, and operate Tuesday - Saturday, 9 a.m. - 3 p.m (except on rainy days and certain holidays). Visit <http://www.oilandfills.com/hhwcc.asp> for additional information.

Key Motivation: The Los Angeles County Sanitation District has noted that the discharge of pharmaceuticals to the environment is an emerging national issue that is receiving a great deal of attention from both the scientific community and the public. Therefore, a proactive, source-based approach to removing these substances from the wastewater stream was deemed prudent in order to minimize future potential impacts on the environment.

Organizing Body: The City of Los Angeles, Los Angeles County Sanitation Districts, and Orange County Sanitation District are the main entities responsible for the establishment and maintenance of the No Drugs Down the Drain program.

Partners: The following organizations teamed up with the above three agencies in 2006 to advance proper disposal methods. In 2007, the program is expected to be expanded with additional support from Los Angeles County agencies in order to broaden educational efforts and evaluate additional collection opportunities.

- California Pharmacists Association
- California Poison Control System
- City of Alhambra
- City of Arcadia
- City of Azusa and Azusa Light & Water
- City of Beverly Hills
- City of Cerritos and Cerritos Senior Center
- City of Compton

- City of El Segundo
- City of Gardena
- City of Hawthorne
- City of Industry
- City of Lawndale
- City of Lynwood
- City of Manhattan Beach
- City of Maywood
- City of Monrovia
- City of Monterey Park
- City of Norwalk
- City of Paramount
- City of Rancho Palos Verdes
- City of San Diego
- City of San Fernando
- City of Santa Clarita
- City of Walnut
- City of West Hollywood
- City of Whittier
- Ford Park Community Adult School
- Los Angeles County Public Works
- Los Angeles County Health Services
- Orange County Integrated Waste Management
- Walnut Valley Water District

Level of Implementation: This program is active on a countywide basis in Los Angeles County and within the service area of Orange County Sanitation District

Cost: Three agencies (Los Angeles County Sanitation Districts, City of Los Angeles, and Orange County Sanitation Districts) have spent approximately \$80,000 to print and mail informational cards and develop the website (www.nodrugsdownthedrain.org). In-kind services, mainly in the form of staff time, were also provided by each agency, but no attempt to quantify the cost of these services has been made.

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Washington State

Program Overview: In 2005, Washington State (population 6,287,759) proposed a statewide pilot program to return medications for proper disposal. Known as Pharmaceuticals from Households: A Return Mechanism (PH:ARM), this program is an organized method of taking back unwanted/expired pharmaceuticals from households. The program uses secure containers for collection as well as secure, licensed transporters from pickup of consolidated material to destruction. Additionally, the program provides witnessed incineration of the unwanted medicines. Therefore, PH:ARM tracks unwanted pharmaceuticals in bulk from collection to end-destruction. PH:ARM relies on existing commercial relationships and does not require inventory of individual items by busy pharmacists and reverse distributors.

The PH:ARM program has the following four aims:

1. Secure system (secure collection, transport, destruction)
2. Low-cost and financially sustainable
3. Effective (volume recovered)
 - a. Accessible & user-friendly
 - b. Ongoing
4. Government is regulating and overseeing but not funding the program

Collection Sites: The PH:ARM program was planned to operate at approximately one hundred locations in Puget Sound starting in 2006/2007, including pharmacies and nursing homes.

Key Motivation: Organizers identified public health and environmental concerns as the primary reasons for the creation of the PH:ARM program. Washington State has recognized the need to prevent accidental poisoning by reducing access to excess pharmaceuticals in households and to reduce water pollution from pharmaceutical chemicals, as well as to foster producer responsibility and reduce waste in the first place.

Organizing Body: The PH:ARM initiative was driven by the following organizations:

- Interagency Resource for Achieving Cooperation (IRAC)
- Local Hazardous Waste Management Program in King County
- Snohomish County Solid Waste Management Division
- Seattle-King County Public Health
- Northwest Product Stewardship Council
- Washington Citizens for Resource Conservation
- Pacific NW Pollution Prevention Resource Center
- Washington Department of Social and Human Services- Aging and Disabilities Services
- Washington State Department of Ecology (Solid Waste and Financial Assistance)
- Washington Board of Pharmacy
- Group Health Cooperative
- Bartell Drug Company

Partners: Other PH:ARM affiliates and supporters include:

- Puget Sound Action Team's Public Information and Education fund
- The Russell Family Foundation
- Seattle Public Utilities
- Group Health Foundation

Refer to [section 3](#) of this binder for Washington's directories of vendors that assist in the management of unwanted/expired pharmaceuticals. The directories list reverse distributors and companies that manage drugs, sharps, or hazardous wastes. They provide suggestions for making the return or destruction of drugs safer, easier, and compliant with regulations.

Level of Implementation: The PH:ARM program for medication disposal aims to be implemented on a statewide basis.

Cost: The projected cost of a statewide program is \$3.3 M (based on initial collection volumes), or approximately \$5.60 per pound of medication collected. Initial volumes from seven locations have been about 1,000 lbs since October 2006.

Outcome: In total, between 66,138 lbs and 429,821 lbs (based on pilot collection rate) are projected to be collected through this approach statewide. Of this, 10%, or between 6 million and 35 million pills, is expected to be controlled substances.

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 Washington
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Alice Chapman/ Cheri Grasso
Local Hazardous Waste Management Program, King County (WA)
Phone: (206) 263-3058 / (206) 263-3089

Allen County, Indiana

Program Overview: TRIAD is a partnership between law enforcement and senior citizens' associations to promote the safety of seniors. The Allen County TRIAD cooperates with Walgreens pharmacies to organize periodic medicine collections. In 2006, collections were held in April and September.

Sites: Medicines were accepted at five drugstore sites and at four police and sheriff's offices in the county.

Key Motivation: TRIAD organizations aim to protect senior citizens- a major goal of this project is to reduce the chances of accidental misuse of medicines by older people who may have numerous medications in their homes. The project also provides information on safe use and storage of medicines and informs participants of donation options to local clinics.

Organizing Body: Allen County TRIAD

Partners: Walgreens Drug Stores

Level of Implementation: County

Contacts: Allen County TRIAD
3401 Lake Ave., Suite 4
Fort Wayne, IN 46805
Phone: (260) 424-3505
Website: www.allencountyriad.4t.com/index.html

Bay Area, California

Program Overview: The Bay Area Pollution Prevention Group (BAPPG), a consortium of the 39-wastewater treatment plants from Alameda, Contra Costa, San Francisco, Marin, Santa Clara, Napa, San Mateo, Sonoma, and Solano counties, established a pharmaceuticals working group that includes wastewater agencies, household hazardous waste programs, and several state agencies. The goals of the BAPPG Pharmaceutical Working Group are:

- To develop a consistent, clear regional message regarding management of unwanted residential pharmaceuticals; and
- To develop and promote implementation of a long-term strategy for management of residential unwanted medicines.

In May 2006, the BAPPG piloted a first-of-its-kind regional collection event for residential pharmaceutical waste that was branded “Safe Medicine Disposal Week.” The week included 59 medication collection events in 39 locations that included Walgreens, City Hall, and Senior Centers within 5 of the Bay Area Counties.

Key Motivation: The BAPPG organized this campaign in hopes of raising awareness about the potential public health and environmental risks posed by disposal of pharmaceutical products.

Organizing Body: The BAPPG (a consortium of the 39 Waste Treatment Plants from Alameda, Contra Costa, San Francisco, Marin, Santa Clara, Napa, San Mateo, Sonoma, and Solano counties) led this week-long collection event.

Partners: Walgreens in the nine Bay Area counties, the Central Marin Sanitation Agency, the San Rafael Fire Department, the Marin County Stormwater Pollution Prevention Program, and the Marin County Hazardous and Solid Waste Program all contributed to the pharmaceutical collection efforts.

Level of Implementation: Each of the wastewater treatment plants organized separate collection events for their service areas; however, their efforts were coordinated on a regional level by the BAPPG.

Cost: Advertising expenditures from all partner agencies totaled \$86,360, and disposal fees added another \$3,645 to the budget (\$50,000 was from one agency). Total staff time spent on the events was 1,980 hours, which included time planning and training for the events as well as operating and cleaning up after the collections and performing evaluations of the effectiveness of the events.

Outcome: The Safe Medicine Collection Event was considered a success, and local agencies collected 3,634 pounds of pharmaceutical waste from approximately 1,500 residents. Collected medicines were sent for incineration. For more detailed information about this program, please refer to www.baywise.info/disposaldays and see the final report at <http://oracwa.org/files/news/168/SFBAYSafeMeds-Report-August2006.pdf>

Other Activities: Event staff surveyed participants dropping off medication. The data gathered from the event's survey results provided a means of evaluating the role of regional partnership in garnering local participation. Staff also collected data on the sources of the medications (participant's medicine cabinet or that of relatives), reasons why the medication was not used (expired or unwanted, etc.), and participant demographics.

Lessons Learned: Event based collection events are an inefficient way to have residents properly dispose of medications, since the events require an enormous amount of resources including outreach, advertising and staff time to organize and table the event.

Long-term Actions: The organizers are considering holding another pilot program under which an individual pharmacy would accept returned medicines year-round. They are also considering pre-paid mailers as a return mechanism for drugs.

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Chicago, Illinois

Program Overview: The City of Chicago began its program in 2003 with annual one-day collection events at 25 locations throughout Chicago's city and suburbs (population 9,661,840) for four years. The program was spearheaded by the Chicago Police Department and targeted older adults. During the 4 years, approximately 6,000 lb of medicines were collected.

At the same time, the City of Chicago also opened a permanent state-of-the-art recycling facility mainly designed for computer and electronics recycling, used motor oil, paints and other household hazardous wastes (Goose Island). Collection of pharmaceuticals at the facility (non-controlled) began in 2007.

In 2008, the City of Chicago received funding to establish permanent collection containers at 5 police stations. Between Oct 2008 and Oct 2009, nearly 1,000 lb of unwanted medicines have been collected at the police stations.

Key Motivation: The Chicago Police Department spearheaded this effort, originally targeting older citizens because of the potential for identity theft and other privacy issues when seniors dispose of pills and pill bottles in the trash.

Organizing Body: This collection program is currently being operated by the City of Chicago with support from the Cook County Sheriff's Police, Chicago Police Department, Chicago Department on Aging, Chicago Department of Public Health, Illinois Attorney General's Office, Illinois TRIAD, and the Metropolitan Water Reclamation District of Greater Chicago.

Collaborators: The U.S. Environmental Protection Agency Region 5's Waste, Pesticides, and Toxics Division, the Great Lakes National Program Office, and Illinois-Indiana Sea Grant also helped to facilitate the event. Several other federal agencies, including the Department of Health and Human Services and Centers for Medicare and Medicaid Services also participated.

Cost: The original Earth Day Region 5 grant to the city of Chicago for the police station program was \$50,000. This covered the purchase of the containers, advertising and some disposal costs.

Outcome: To date, through the one-day collections over 4 years and the ongoing collection program at 5 police stations and the Goose Island Recycling facility, over 7,000 lb of pharmaceuticals have been collected and properly disposed.

Sites: One-day unwanted medicines locations throughout Chicago, Cook County, and Naperville, Illinois and the five police stations with ongoing 24 hour collection:

Chicago Locations

- | | |
|---|-----------------------------------|
| • West Lawn Park | 4233 West 65 th Street |
| • Mather's More Than a Café | 33 East 83 rd Street |
| • Chicago Police Dept. 5 th District | 727 East 11 th Street |
| • Chicago Police Dept. 9 th District | 3501 South Lowe Avenue |
| • Swedish Covenant Hospital | 2751 West Winona Street |

- Chicago Police Dept. 16th District 5151 North Milwaukee Avenue
- Chicago Police Dept. 17th District 4650 North Pulaski Road
- Mt. Sinai Hospital California Avenue at 15th Street
- Chicago Police Dept. 15th District 5701 West Madison Street
- Metcalfe Federal Building, 2nd Floor 77 W. Jackson Blvd.

Suburban Locations

- Thornton Township Senior Center Calumet City
- Orland Township Senior Center Orland Park
- Stickney Township Senior Center Burbank
- Worth Township Senior Center Alsip
- Matteson Police Department Matteson
- Maine Township Senior Center Park Ridge
- Northfield Township Hall Glenview
- Schaumburg Township Senior Center Hoffman Estates
- The Wellness Center NW Community Healthcare Arlington Heights
- Village of Skokie, Office of Human Services Skokie
- Southwest Suburban Center on Aging LaGrange
- Casa San Carlo Retirement Community Northlake
- Forest Park Senior Center Forest Park
- Naperville Police Department Naperville

Contacts:

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City of Cleveland, Ohio

Program Overview: The Cleveland Department of Public Health in collaboration with the Division of Waste Collection organized a Pharmaceutical Round-up Event on May 7th 2008. This one day event generated 381 lbs of pharmaceuticals and attracted hundreds of area residents. While organizing the event the following had to be taken into account:

- The state of Ohio has in-place regulations prohibiting the acceptance, possession, transport and disposal of certain pharmaceuticals by individuals to whom they are not prescribed.
- Some pharmaceuticals are subject to Drug Enforcement Agency (DEA) guidelines if they fall under the category of controlled substances.

In order to properly dispose of any substances brought in at the event, the organizers searched for an Ohio State Board of Pharmacy approved company. The company would need to be able to accept any pharmaceuticals generated at the event, in addition to properly containing, transporting and disposing of them. Environmental Enterprises, Inc. was able to satisfy these conditions, had all the required licensing, and fit within the budget of the event.

The largest expense for the event was advertising, including announcements on radio stations (WZAK, WJMO/WERE, WMJI, WNWV, WCPN, Clear Channel), in the newspaper (Cleveland Plain Dealer), and in Scene Magazine. Many of the area residents who came out expressed their gratitude for the opportunity to properly dispose of their medications.

Collection Sites: Two locations were set up at the Waste Collection Division facility at 5600 Carnegie Ave., and the Transfer Station at 3727 Ridge Road.

Key Motivation: The goal was to provide residents with a way of properly disposing of their unwanted pharmaceuticals. In turn, the organizers hoped to decrease the incidence of accidental poisonings and drug abuse, as well as promote environmental quality.

Organizing Body: Cleveland Department of Public Health

Partners: Division of Waste Collection and Environmental Enterprises, Inc. Due to the fact that Environmental Enterprises, Inc. had all of the appropriate licensing and disposal procedures in place, no police involvement was necessary.

Level of Implementation: The event was hosted in the City of Cleveland, however advertisements of the event were sent to all of Cuyahoga County.

Cost: The total cost for this one-day event was \$18,318, which was funded through a grant from the U.S. EPA's Great Lakes National Program Office to the Division of Waste Collection. A portion of the grant was then distributed to the Cleveland Department of Public Health for collection and disposal of the unwanted pharmaceuticals. The collection and disposal of 381 lbs of pharmaceutical materials cost \$4,381, according to Environmental Enterprises, Inc. The remainder of the grant (\$13,937) went towards setting up an advertisement campaign. The itemization of advertising expenses is as follows:

Radio Buy	# Spots	Frequency	Spot Type	Run Dates	Total Cost
WZAK (Old Med Education & Roundup)	30	2 wks	:60 & :15	4/21 to 5/4	\$2,175.00
WJMO/WERE (Old Med Education & Roundup)	40	2wks	:60 & :15	4/21 to 5/5	\$450.00
WMJI (Old Med Roundup)	10	1 wk	:30	4/21 to 4/26	\$1,950.00
Clear Channel Traffic (Old Meds Education & Roundup)	36	1 wk	:15	4/28 to 5/5	\$2,700.00
WNWV 107 Wave (Old Med Roundup)	35	1 wk	:30	4/28 to 5/7	\$1,540.00
WCPN (Education & Roundup)	18	1 wk	:15 & :30	4/28 to 5/7	\$1,530.00
Print Ad Buy					
Plain Dealer (Old Med Roundup)		1x	1/4 page	Sunday 5/4	\$2,480.00
City News (Old Med Roundup)		1x	1/4 page	Thursday 5/1	\$500.00
Scene Magazine (Computer Round)		1x	1/3 page	Thursday 4/17	\$612.00
Total Media Costs					\$13,937.00

Outcome: The event was a success and generated a total of 381 lbs of pharmaceuticals, which is equivalent to 76,200 pills. The large scale advertising made an impact and attracted hundreds of area residents.

Long-term Actions: The event was successful and there is a desire to host future events, however due to lack of funding no ongoing programs or plans for future events currently exist.

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Earth Keeper Initiative, Upper Peninsula, Michigan

Program Overview: The Earth Keeper Initiative is a coalition of faith communities in Michigan's Upper Peninsula taking action to protect the environment. Nine faiths have joined the Earth Keeper coalition, including more than 140 congregations in the Upper Peninsula: Catholic, Lutheran, Methodist, Episcopal, Jewish, Buddhist, Bahai, Unitarian and Presbyterian. Earth Keeper is a project of the Superior Watershed Partnership, a nonprofit organization dedicated to the protection and restoration of the rivers and watersheds of the Upper Peninsula of Michigan.

On Earth Day 2007, the Earth Keepers organized a multi-site medicine cabinet clean sweep event for the public. This was their third clean sweep event designed to allow the public to dispose of hazardous materials safely. In past years the Earth Keeper group had held collections for discarded electronics (over 300 tons collected in one day) and other household hazardous waste such as batteries, paint and cleaning products (over 45 tons collected in one day).

The event was publicized through church bulletins, e-mail networks, and local media (TV, radio, newspapers). In addition, the event planners wrote a weekly news article about the collection that was published in local newspapers for 8 weeks leading up to the event. Earth Keeper's media representative distributed press releases to local and regional news outlets. The group developed a [publicity flyer](#) that is included in section 4 of this resource kit and was also adapted for use by the Sangamon County collection event in Illinois.

At each collection site, qualified pharmacists inventoried the controlled drugs. Law enforcement officials from the state and local police as well as the Sheriff's Office were on site to provide security and take custody of the controlled substances that were collected. 400 volunteers from the various religious communities and from nearby universities and from Thrivent Financial staffed the collection sites.

Participants in the drop-off received fact sheets instructing them on how to dispose of medicines safely in the future, since this was a single-day collection.

The collected medicines were destroyed in a hazardous waste incinerator in St. Louis, MO.

Collection Sites: Nineteen sites across all fifteen counties in Michigan's Upper Peninsula hosted collections. Most of the collections were held at churches, while a few were at other sites such as a medical center and a Salvation Army location.

Key Motivation: According to a pastor of one of the churches involved, "This was a wonderful event – a perfect marriage of two concerns – care of the environment and the need to remove drugs that might otherwise be abused from the community."

Organizing Body: Earth Keeper Initiative in conjunction with the Cedar Tree Institute and the Keweenaw Bay Indian Community.

Partners:

Upper Peninsula Chapter of the Michigan Pharmacists Association

Michigan DEA
Michigan Sheriff's Association
Michigan State Police
Police departments from participating towns and counties
Thrivent Financial for Lutherans
Students from Northern Michigan University, Michigan Tech, Finlandia University and Lake Superior State University
U.S. Senator Carl Levin's Office
Northern Michigan University Environmental Science Program
400 volunteers organized and staffed the collection events

Level of Implementation: Collections were held simultaneously in all 15 counties across the Upper Peninsula of Michigan. After the event, the collected medicines from all the sites were consolidated into a single truck belonging to the waste hauling/disposal contractor.

Cost: Waste transport and disposal was contracted for \$20,000. There were also extensive planning and logistical staff and support time costs. These costs as well as publicity expenses were covered through grants from U.S. EPA and from Thrivent Financial for Lutherans. Earth Keepers received grant money from the Lake Superior Lakewide Management Plan along with a CARE grant (Community Action for a Renewed Environment) from U.S. EPA.

Pharmacists and law enforcement officials supported the event through in-kind donations of their time and expertise to handle the controlled substances.

Thrivent and church partners provided free refreshments for the public at all 19 collection sites.

Locations and basic site equipment such as tables were in-kind loans from Earth Keeper member congregations.

Outcome: About 2,000 people showed up to turn in a total of more than one ton of unwanted medicines during the single-day event. Controlled substances with an estimated street value of half a million dollars were collected and safely destroyed to prevent abuse.

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Erie, Pennsylvania

Program Overview:

On April 26, 2008, Pennsylvania Sea Grant and its partners the City of Erie, Lake Erie-Allegheny Earth Force, LECOM school of Pharmacy, and Erie Times-News in Education held a first of its kind unwanted medicine collection event in Erie, Pennsylvania entitled “Keep Unwanted Medicine out of Lake Erie”. The City of Erie and the surrounding area are home to over 250,000 people and encompass 63 miles of Lake Erie shoreline. The goals of this project were to reduce the number of chemicals being disposed of down the drain, ending up in the Great Lakes, and also to raise awareness and increase knowledge of Erie citizens about the impact improper disposal of pharmaceuticals may have on Lake Erie water quality. This was a one year project funded by the U.S. Environmental Protection Agency. The project components were two-fold: A media campaign and the unwanted medicine collection event.

In addition to holding the event, a media campaign was implemented to inform Erie residents about the pharmaceutical waste collection project. This media campaign included:

- Development of project posters, postcards, and pharmacy slips incorporating information about the event as well as the federal guidelines for proper disposal (www.whitehousedrugpolicy.gov)
- Distribution of these outreach materials to local pharmacies
- An Erie Times-News in Education page dedicated to pharmaceutical waste in the water
- Several newspaper articles advertising the event
- A “pre-event” survey question posted in the Erie Times News which resulted in 685 responses
- Partnering with the WJET-TV 24 Erie Green Campaign
- Disbursement of a press release to all local media outlets
- Holding a News Conference prior to the collection event
- Posting on the Earth 911 website

Pre-registration for the collection event was preferred; however, was not required. At the collection event, residents were able to drop off their unused or expired medications as well as personal care products free of charge. Participants’ on-site time was very brief; they were asked to show their medications to the pharmacist for approval before they were accepted, and to fill out a short survey.

Acceptable items included:

- Prescription Medication
- Over-the-Counter Medication
- Ointments
- Creams
- Vials
- Pet Medications
- Personal Care products

Items not accepted included:

- Illegal drugs

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- Bio-hazardous Material
- Needles/sharps
- Inhalers and under pressure items
- Household Hazardous Waste (paint, pesticides, oil, gas)

All controlled substances were identified, separated out, inventoried, and then placed in the possession of City of Erie Law enforcement officials. Non-controlled substances were sorted, counted, logged into computers, and placed in hazardous waste containers provided by Environmental Coordination Services and Recycling (ECS&R).

Collection Site:

The one time collection event took place at the Cruise Boat Terminal building behind the Blasco library in downtown Erie, Pennsylvania. Residents could drop off their medications anytime between 10 am-2 pm.

Key Motivation:

The main motivators for this project are environmental. The Great Lakes are under constant stress from many forms of pollution. Pharmaceutical waste in the water is an emerging concern in the Great Lakes region and our goals were:

- 1.) To increase knowledge of Erie citizens about the impact improper disposal of pharmaceuticals may have on Lake Erie water quality.
- 2.) To increase the knowledge of Erie citizens about how to properly dispose of medication and prevent pharmaceuticals from contaminating the Lake Erie ecosystem.
- 3.) To decrease the number of toxic substances present in the streams, riparian habitats, and tributaries leading into the Great Lakes.

Organizing Body:

Pennsylvania Sea Grant along with its partners the City of Erie, Lake Erie-Allegheny Earth Force, LECOM school of Pharmacy, and Erie Times-News in Education.

Partners:

The following organizations teamed up with the above organizing body members to make the collection program a success.

- Community Health Net
- Department of Conservation and Natural Resources
- Environmental Coordination Services and Recycling (ECS&R)
- Erie County Environmental Coalition
- Erie Center on Health and Aging
- Erie County Health Department
- Erie Housing Authority
- Erie Port Authority
- Erie Wastewater Treatment Facility
- Local Pharmacies

- Greater Erie Community Action Committee (GECAC)
- Hamot Medical Center
- Lake Erie Sierra Club
- Local Senior centers
- Pennsylvania Lake Erie Watershed Association
- Presque Isle Audubon
- State Board of Pharmacy
- USDEA local agent
- Visiting Nurses Association
- WJET-TV 24 Erie Green Campaign

Level of Implementation:

This event was organized at the city level but was intended to serve residents from the surrounding areas as well.

Cost:

The cost of this program was provided by a one-year grant from EPA totaling \$24, 931.

Outcome:

A total of 87 residents participated in the collection event, 61 of whom were unregistered and 89% of whom were over the age of 46. A total of 120 gallons of material was collected, 5 gallons of which were controlled substances. Approximately 70,000 non-controlled pills, 4,000 controlled pills, and 400 personal care products were collected during the event.

Lessons Learned:

1. Know all agency players up front in order to ensure requirements are met. In Pennsylvania this included EPA Region 3 (with assistance from Region 5), Pennsylvania Department of Environmental Protection, and the Pennsylvania Department of Health.
2. Be prepared for a bumpy ride if pharmaceutical and personal care product collections are not the norm in your area. Our event included many stops and starts which we overcame through perseverance and professionalism. Agency staff may have to work through the process using your event as a test case. Including the waste hauler in conversations with agency staff was very helpful. They ‘spoke the lingo’ and were able to address agency staff’s concerns.
3. Advertise in many venues as often as possible. Partnering with the local newspaper was invaluable. Two-thirds of those who responded to our survey had heard about the event through the newspaper.
4. Involve local legislators in the event. A representative from the PA House attended the event and got a firsthand look at what was collected and where it came from. He also heard how happy people were to have an environmentally-friendly option for drug disposal.

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City of Green Bay, Wisconsin

Program Overview: Brown County Port and Solid Waste Department, in collaboration with the Sustainable Greater Green Bay Task Force, sponsored two pharmaceutical collection events for 2008, one on April 18- 19, 2008 and another on September 19, 2008. The events were very successful, in total attracting more than 930 individuals and bringing in over 2,100 pounds of medications.

In addition to the collections, the City of Green Bay also spent nearly 10 months on public education and awareness. The goal was to ensure that the public and local law enforcement officials had a better understanding of the importance and relevance of proper disposal of unwanted medications. Advertising was essential to accomplishing this goal. Organizers advertised on local radio stations, through free press coverage in local newspapers and through posters and mailings. In all, over 200 direct mail pieces were sent out to Brown County pharmacies, clinics, dentists, veterinary offices and hospitals, prior to each collection.

Furthermore, the partnership hired a graphics designer to create an educational brochure to be used at special events and distributed to the general public. Approximately 45,000 postcards were also created and sent out to 45 pharmacy locations in Brown County. Each pharmacy then received 1,000 postcards that they could include in prescription bags, notifying the public of the issue and any upcoming events.

At the end of these collections, all medications were taken to a disposal facility in St. Louis, Missouri by the Brown County Sheriff's Department. The medicines were taken to Missouri for disposal as this facility was (to the best of their knowledge) the closest location for environmentally safe and proper disposal.

Collection Sites: The April 18th-19th collections were hosted at Streu's Pharmacy Bay Natural in downtown Green Bay and the September 19th collection took place at ShopKo Pharmacy in De Pere, Wisconsin.

Key Motivation: The primary motivation for hosting these collection events was to increase public awareness about unwanted medicines and promote the environmental integrity of the region.

Organizing Body: Principal event organizers were the Brown County Port and Solid Waste Department and the Sustainable Greater Green Bay Task Force.

Partners: Other essential supporters included the City of Green Bay, the Green Bay Metropolitan Sewerage District, Brown County, Bay Lake Regional Planning Commission, the Brown County Sheriff's Department, Streu's Pharmacy Bay Natural and ShopKo Pharmacy.

Level of Implementation: The events were open to Brown County residents, but individuals from surrounding areas were also permitted to dispose of their unwanted medications.

Cost: The City of Green Bay received a \$25,000 grant from the U.S. Environmental Protection Agency, which was then administered to the organizers of the event. Expenses were greater than anticipated due to the success of both events and the extra drums of medication requiring a U-Haul truck for transport. The disposal fee is based on pounds. To offset these increases, more supplies and staff time (including fringe) were provided in-kind. Please see the below table for a detailed listing of the event costs:

Personnel/Salaries	Actual Cost	In-Kind	Further Information
Sheriff	\$1,524.76		
Solid Waste Staff		\$1,532.00	
City Staff		\$375.00	
Fringe			
Sheriff	\$152.40		<i>Extra staff needed</i>
Travel			
Disposal Transportation	\$1,124.26		<i>Includes U-Haul rental</i>
Supplies			
Postage/Printing	\$556.65	\$600.00	<i>Includes direct mailings, posters and postcards to pharmacies</i>
Contract Costs			
Advertising	\$11,315.00		<i>Includes radio station fees</i>
Marketing/Educational	\$5,586.93		<i>Educational brochure design and 10 months of public education and outreach</i>
Other Costs			
Disposal Fee	\$2,940.00		<i>For the over 2,100 lbs of collected materials</i>
One Time Burn Fee	\$1,800.00		
TOTAL	\$25,000.00	\$2,507.00	

Outcome: The April two-day event attracted roughly 730 participants and the September one-day event attracted 300 participants. In total, over a ton of unused medication was collected. The collected materials included 1,700 pounds of pills, 470 pounds of liquid medication, 31 pounds of aerosols and inhalers, six mercury thermometers, and several pounds of miscellaneous items.

At the April event, a survey was conducted of each participant to learn where they heard about the collection event and also how they previously disposed of their unwanted medications. Surveys were collected from over 700 participants and the results were as follows:

How did you hear about this unwanted medicines collection event?

Newspaper	42%
Television	35%
Radio	13%
Poster	10%

How have you been disposing of unwanted meds?

Storing	40%
Flushed	26%
Garbage	26%
Other	8%

Long-term Actions: The Brown County Sheriff's Department now provides a daily, on-going unwanted medicine collection drop-off program for Brown County residents. Residents can bring unwanted medications to the primary law enforcement center located in downtown Green Bay. The Wisconsin Public Service will handle all future disposals including any waste generated by this program.

After months of public education and outreach to residents and law enforcement officials, more Green Bay residents are now aware of the dangers of improper medicine disposal. Unfortunately, that means individuals may end up storing the materials (as evident in the survey) unless there is a suitable disposal option in place. Therefore there still exists a need for collection events in and around the area.

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Milwaukee, Wisconsin

Program Overview: In September 2006, the Milwaukee Metropolitan Sewerage District (MMSD) partnered with the Milwaukee Police Department and Aurora Pharmacy to hold a single-day medicine drop-off event for Milwaukee households. Participants could drop off their unneeded medicines for safe disposal. Controlled substances were taken into the custody of the City of Milwaukee's police department and incinerated with confiscated items, while non-controlled medicines were incinerated by MMSD's contractor, Veolia Environmental Services, in an approved hazardous waste incinerator. All medicines were sorted and separated at the collection site into controlled and non-controlled bins by volunteer pharmacists from Aurora Pharmacy.

A second drop-off event took place in June 2007 and boasted increased participation as well as increased quantities of drugs collected.

In April 2008, the MMSD in coordination with Milwaukee, Racine, Ozaukee and Washington counties, put together an event that included the collection of unwanted medicines and personal care products. During the event more than 2,300 residents participated. Residents were encouraged to drop off unwanted prescription medications, over-the-counter medicine, ointments, sprays, inhalers, creams, and pet medications to one of the six different sites. The number of participants and amount of medications collected for each of the four counties are as follows:

	Participants	Non-Controlled Substances	Controlled Substances
Milwaukee County	1,080	4,487 lbs	36,831 (Pills, Patches & Bottles)
Ozaukee County	365	1,022 lbs	3 (30 gallon drums)
Racine County	523	761 lbs	50 lbs
Washington County	380	743 lbs	83 lbs
TOTAL:	2,348	7,013 lbs	----

Licensed pharmacists, law enforcement officials and waste disposal staff were positioned at each of the locations to properly identify, catalogue and dispose of the substances. All medicines were contained in fiber drums that were then incinerated at federally licensed facilities.

Public outreach and advertising efforts informed residents of the detrimental effects of flushing or pouring medicines down the drain. To boost participation for the event MMSD, as well as government, environmental and health organizations organized the following promotional efforts:

- Several hundred posters
- 200,000 printed postcards
- Thousands of electronic postcards
- Creation of the "pill fish" symbol by the MMSD
- Advertisements printed in the Milwaukee Journal Sentinel and other local newspapers

- Reader spots run on local radio stations

Collection Site: The parking lot of the Milwaukee Brewers' Miller Park baseball stadium served as a convenient drop-off site since it allows for streamlined traffic flow. Event coordinators used this site for the 2006 and 2007 events.

In the 2008 collection event four Wisconsin counties (Milwaukee, Ozaukee, Racine and Washington) participated. Drop-off locations included Miller Park in Milwaukee, the City of Racine, the City of Burlington, Ozaukee County Highway Department, Milwaukee Area Technical College at the Mequon Campus, and Washington County Fair Park.

Key Motivation: MMSD cited environmental concerns related to emerging research that shows trace amounts of pharmaceutical chemicals in waterways and the known and unknown adverse impacts on aquatic life and water quality. Police department participation was motivated by concerns relating to prescription drug abuse, theft and accidental poisonings.

Organizing Body: Milwaukee Metropolitan Sewerage District

Partners: Milwaukee Police Department, Aurora Pharmacy, Milwaukee Brewers baseball team, University of Wisconsin – Milwaukee Great Lakes WATER Institute, Veolia Environmental Services, City of Milwaukee Health Department.

In 2008, Ozaukee County Health Department, Veolia Environmental Services, City of Racine Health Department, Caledonia/Mt. Pleasant Health Department, Western Racine County Health Department, City of West Bend (West Bend Sewer Utility), the U.S. Environmental Protection Agency Great Lakes National Program Office, Aurora Pharmacy, Columbia St. Mary, Milwaukee Police Department, Milwaukee Health Department, Milwaukee Brewers Baseball Club and others.

Level of Implementation: The 2006 and 2007 collections were organized through MMSD's Household Hazardous Waste Program, which is funded by residents of Milwaukee County. The Medicine Collection Day was only open to Milwaukee County residents. MMSD continued to seek other partners or funding sources to be able to open the collection to more people in southeastern Wisconsin, and in 2008 the collection expanded to include three additional counties.

Costs:

2006

- Transportation & treatment for 824 lbs. of non-controlled = \$1,461
- Veolia Environmental Services labor costs = \$1,986
- Transportation, destruction & labor for controlled substances were donated by Milwaukee Police
- Pharmacists = volunteered
- Advertising = MMSD staff time and material for web site info, news release, posters, and informational handouts.
- Tent, tables, chairs, barricades = \$3,975

2007

- Transportation & treatment for 2,387 lbs. of non-controlled = \$3,904
- Veolia Environmental Services labor costs = \$1,058
- Transportation, destruction & labor for controlled substances were donated by Milwaukee Police
- Pharmacists = volunteered
- Advertising = \$1,500 for 80,000 postcard size informational fliers for distribution in Milwaukee area pharmacies. MMSD staff time and material for web site info, news release, and posters.
- Tent and traffic control = Aurora Health Care loss prevention officers provided on-site traffic control. This was provided by Aurora as a part of the partnership commitment. \$353

2008

MMSD received a grant of \$18,650 from the USEPA Great Lakes National Program Office and made the following reimbursement payments to partners for Medicine Collection contract related costs:

- Racine City Health Department \$2787.68
- Ozaukee County Public Health \$2300.00
- West Bend Sewer Utility \$2142.00

The remaining funds were used to reimburse MMSD for the \$10,000 radio buy and other advertising costs for promoting the collection. Aurora Pharmacy also contributed \$4,000 (not grant funded) to print 200,000 promotional postcards and distributed information through its pharmacies to customers.

Advertising: Interviews conducted at the collection indicated that most people found out about “Medicine Collection Day” from postcards handed out with prescriptions at pharmacies and from newspaper coverage. In 2007, the program received at least three newspaper stories and a free public service announcement. Survey results showed the following sources for program awareness:

172	Post card	162	Newspaper
63	Radio	50	Aurora Hospitals / Pharmacy
34	Pharmacy	25	TV
19	MMSD web site	18	Friend/family
8	Email	7	Doctor
6	Church	5	Poster

Aurora Pharmacy ran 15-second spots on two radio stations in 2007. Aurora also paid for live remotes from the collection during the event. Aurora provided multiple communications to its Milwaukee-area employees through internal e-mail messages. These messages were delivered by Aurora Pharmacy leadership to more than 10,000 Aurora employees who work in the Milwaukee area.

Outcome: Increasing numbers of participants in the single-day events each year, with 128 people in 2006 and 508 in 2007. 824 lbs. of non-controlled substances and 10,472 controlled substances

(counting individual pills, patches, and bottles) were collected in 2006, and the quantities increased to 2,387 lbs. of non-controlled and 24,751 controlled substances in 2007.

For 2008, all three goals of the program were met: 1) establish for the first time a coordinated annual, regional medicine collection program to keep drug related chemicals out of waste streams, 2) educate the public about what they can do to help protect area waterways and Lake Michigan, and, 3) build public awareness and support for the need for additional scientific research on the impact drug related chemical contamination in the environment. A secondary goal is to begin to raise awareness of the need for the medical and drug manufacturing industries to assume responsibility for the proper redistribution and/or disposal of drugs.

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Monroe County, Indiana

Program Overview: In 2001, the Monroe County (population 121,407) Solid Waste Management District (SWMD) and the Monroe/Owen TRIAD (partnership between police, sheriffs and senior citizens' organizations) initiated a pilot take-back program for unwanted and expired pharmaceuticals. The following items were collected:

- Liquid and solid over-the-counter and prescription medicines, including pills, syrups, creams, ointments, and eye drops.
- Controlled substances
- Vitamins and health supplements
- Common medical equipment, including sharps, inhalers, and mercury thermometers

Currently, the partnership is implementing two medicine collection programs. In addition to annual week-long collection events specially designated for medicines, the county's HHW drop-off site accepts medicines and is open six days per week, year-round. Since law enforcement officials can only be present at the HHW site for the annual week-long event, controlled substances are only accepted during that week, while non-controlled medications are accepted year-round. For the remainder of the year, controlled medications can be brought to the Sheriff's Department for disposal.

At the week-long collection events, controlled substances are taken into the possession of a law enforcement official and transported to the Sheriff's Department, where the drugs are incinerated with other confiscated drugs.

All other collected items are transported to the Monroe County SWMD household hazardous waste (HHW) facility in compliance with DOT regulations. There they are sorted into categories such as aerosols, mercury-containing compounds, etc., and are disposed of by the SWMD's hazardous waste contractor. Where appropriate, the unwanted medicines collected are incinerated (this is not the case for the mercury-containing products, but it is the normal procedure for most medicines).

Collection Sites: The collection program began with senior centers and has now expanded to libraries, fire stations, and police stations in order to reach an expanded clientele. And all HHW sites serve as collection centers as well.

Key Motivation: Originally, Monroe County's pharmaceutical disposal initiative was driven by TRIAD, an organization that connects law enforcement officials and seniors to help reduce crime and increase consumer education and safety. Therefore, concern for the accidental ingestion of expired pharmaceuticals by the elderly provided the force for the campaign. Additionally, since 2001, potential harm to children and animals and concern for the environment have also been cited as motivators for the take-back program.

Organizing Body: The key organizers of the program are the Monroe County Solid Waste Management District and the Monroe/Owen TRIAD.

Partners: Indiana State Police, Sheriff's Department, Local Fire Departments, School Corporation, Area 10 Agency on Aging, Indiana Attorney General, AARP, Retired and Senior Volunteer Programs (RSVP), SMART, Monroe County Prosecutor's Office

Level of Implementation: This program was initiated at the county level.

Cost: Expenses were shared between the parties involved. The Monroe County SWMD covered the disposal fees (\$285 per 55-gallon drum), TRIAD and the Indiana Attorney General's office paid for signage, the Sheriff's Department provided a reserve deputy for each collection site and paid for flyers to promote the events, and AARP sent a direct mailer about the events to all of its members in the county and provided give-aways for participants and refreshments for volunteers.

Advertising: Collection programs were publicized through the AARP mailer, a newspaper article, flyers, senior citizen publications, public service announcements, an advertisement on prescription drug packaging at the local pharmacies, and the Indiana State Police's weekly radio show.

Outcome: Increasing numbers of participants in the single-day events each year, with 281 in 2006. 280 lbs. of solid pharmaceutical waste and 76 lbs. of liquids were collected in 2006, in addition to 272 containers of controlled substances and 166.7 lbs. of sharps.

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See www.ecy.wa.gov/programs/swfa/mrw/ppt/2005/ScottMorgan.ppt

Northeast Recycling Council (Massachusetts, Maine, New Hampshire, and Vermont)

Program Overview: The Northeast Recycling Council (NERC) is a non-profit organization that encompasses 10 Northeast states. Its mission is to promote sustainability in solid waste management. NERC received a grant from the U.S. EPA to pilot consumer pharmaceutical take-back programs. This project aimed to develop and implement a replicable pilot for collecting unwanted medications at HHW collections or in rural settings. Pilot activities included writing a guidance document detailing collection methods for these hazardous wastes and developing best management practices (BMPs) for plastic medication associated containers. (These are included in section 3 of this resource kit.) The pilots were designed around three models: retail-based, senior center, and HHW programs. The project focused on Massachusetts, Maine, New Hampshire, and Vermont.

Montague, MA—Franklin County

In December 2004, NERC and the Franklin County Solid Waste Management District (FCSWMD) in Western Massachusetts partnered to carry out a pilot collection and disposal event for unwanted medications. Both entities had received grant funding to explore safe collection and disposal options for unwanted medications. FCSWMD received funding from the USDA, Rural Utilities Service and NERC from the U.S. EPA. Because the collection of pharmaceuticals is relatively unexplored in the United States, staff from FCSWMD and NERC conducted research into the consequences of unsafe disposal of drugs. Research was also conducted on the various options that could be applied to the collection of medications and contacts were made with other agencies (local, state, and federal), as well as commercial and nonprofit agencies around the country. NERC established an advisory board representing interested parties, regulators, government representatives, pharmaceutical representatives, and others.

South Hadley, MA

In June 2005, NERC worked with the South Hadley, Massachusetts Department of Public Works to hold a successful unwanted medication collection in conjunction with the town's annual HHW event. 2,500 estrogen patches were collected at the event. In total, 30 gallons of hazardous waste were shipped for incineration and 0.5 gallons of controlled substances went to the South Hadley Police Department. There were 22 participants. In addition, one Conditionally Exempt Small Quantity Generator (a pharmacy) brought in two boxes of compounding chemicals, for which the pharmacy paid a \$190 disposal fee to the hazardous waste hauler.

South Portland, ME

In February 2005, NERC organized a collection event to test one approach to collecting unwanted medications from the general public—a one-day in-store (pharmacy) collection event. In all, 52 participants contributed 55,342 tablets, 12.2 lbs of fluids, and 199 lbs of hazardous wastes.

For a complete report on the in-store pilot held at CVS Mill Creek, please visit <http://www.nerc.org/adobe/CVSPilotReportFINAL.pdf>.

Collection Sites: The following locations served as collection sites for various pilot events:

- Montague, Massachusetts--Franklin County Pilot Unwanted Medications Collection--Montague Senior Center. (This pilot collection specifically targeted senior citizens, as

this population segment has a higher percentage of individuals that utilize prescription drugs.)

- South Hadley, Massachusetts
- South Portland, Maine—CVS Mill Creek Pharmacy
- Wilbraham, Massachusetts

Key Motivation: NERC has identified the following four concerns as the primary drivers of the program:

- Water contamination: drugs have been found in surface and drinking water
- Solid waste: access to drugs in trash; some drugs are hazardous waste
- Homeland security: need to limit access to chemicals (reagents and catalysts)
- Inappropriate use/diversion: improper disposal can lead to poisoning of children and pets and drug theft and other related crimes

Organizing Body:

Montague, MA: This event was the result of efforts from the Franklin Medical Center (local hospital), the Montague Police Department, Montague TRIAD, FCSWMD, and Clean Harbors[®] Environmental Services (company responsible for transport of hazardous waste).

South Hadley, MA: Cooley Dickinson Hospital in Northhampton, Massachusetts provided the services of a pharmacist at the collection event. The South Hadley Police Department also provided support and assistance. The Western Massachusetts Municipal Recycling Incentive Program Coordinator also assisted with the planning of the event.

South Portland, ME: In order to develop the pilot collection program, NERC worked in cooperation with the following companies and agencies:

- CVS headquarters legal and government relations offices
- South Portland Maine Police Department
- Maine Department of Environmental Protection
- Clean Harbors[®] Environmental Services
- PharmEcology[®] Associates, LLC (assists healthcare organizations in minimizing and properly managing pharmaceutical waste)
- Pharmacy Supervisor for CVS Mill Creek, South Portland, Maine

Wilbraham, MA: At this collection event, NERC received the assistance of Baystate Health, who provided a pharmacist as well as funding for tent rental and hazardous waste disposal. In addition, three nurses and individuals from the participating communities volunteered their time. The Wilbraham Police Department also provided essential services and support for the collection.

Partners: At all collections, the required team included a pharmacist, a data entry person, a law enforcement officer, and at least two volunteers.

Level of Implementation: Each of the four pilot collection programs mentioned above was implemented at the community level. However, each of the programs was organized and supported by a regional organization, NERC, which represents 10 Northeast states.

Cost:

Montague, MA: The costs of the pilot collection program were as follows:

- Police officer: \$150
- NERC & FCSWMD Staff:
 - Planning
 - Implementation
 - Analysis
- Hazardous Waste Disposal of Non-controlled substances: \$450
 - Pick-up on a weekday: \$100
 - Staff for pick-up: \$200
 - Disposal for 5-gallon pail: \$150
- Disposal of controlled substances: Free to program through state evidence destruction program
- Advertising

South Hadley, MA: NERC's unwanted medication collection event was funded by the U.S. EPA through an innovative Solid Waste Management Grant. In addition, Franklin County Solid Waste Management District provided support at the event through a grant from the USDA.

South Portland, ME:

NERC's EPA grant of \$6,465 included \$1,000 for advertising, \$315 to reimburse the Police Department for the officers' time, and money for planning, implementation, and analysis by NERC staff (\$4,300) and a consultant (\$850).

CVS's corporate headquarters covered the costs of transportation (\$250) and disposal (\$900) of hazardous waste and paid for additional printing and copying (\$75).

The local CVS store paid for the services of its pharmacist and pharmacy technician (\$600) and took care of disposal of non-hazardous wastes (uncontaminated packaging, etc.)

The county's Solid Waste Management District provided staff services to run the collection and survey participants.

Outcome:

Montague, MA: The following volume of material was received at the collection:

- As shipped—5 gallon bucket of non-controlled substances
- Approximately 0.5 gallons of controlled substances
- 140 medications (25 controlled, 115 non-controlled) were received
- Controlled substances accounted for 18% of total medications
- Estimated retail value of medications received was \$3,753.68
- Estimated "street value" for the controlled substances was \$6,056.25 (at \$7.50 per pill according to the Police Officer)

South Hadley, MA: An overview of the collection event follows:

- 22 participants
- 2,197 items collected
- Average of 100 items per participant
- Shipped 30.5 gallons (30 gallons hazardous waste, ½ gallon controlled)
- Average of 1.4 gallons or 2.7 pounds per participant
- 8 controlled items = .004% of material that came in
- 70% of contributions were prescription medications
- 358 different types of medications were collected

South Portland, ME: The following volumes of materials were collected from the one-day pilot collection:

- Federally controlled substances = 1,305 tablets
- Non-regulated materials = 54,037 tablets
- Ointments = 687.55 grams
- Non-controlled fluids = 6,314 mL

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Department of Public Health, Sangamon County, Illinois

Program Overview: Sangamon County (population 189,000) is located in central Illinois and includes the state capital, Springfield. The county's Department of Public Health organizes periodic drop-off days for household hazardous waste. In 2007, the Illinois Environmental Protection Agency offered to fund transportation and disposal of non-controlled medicines collected through county-organized HHW collections. As a result, Sangamon County was able to add medicines to the list of substances it accepted at its spring 2007 collection.

The event was publicized via ads in the Springfield newspaper as well as rural Sangamon County papers. Event organizers also placed a 60-second radio ad promoting the HHW event and highlighting the fact that unwanted medicines would also be accepted. For the radio spot, they selected the most popular local radio station that attracts 25-and-older listeners (an [mp3 audio file](#) of Sangamon County's radio ad is available in section 4 of the CD and online versions of this resource kit.) Additionally, Sangamon County used adaptations of the promotional flyer developed by the Earth Keeper initiative and the informational trifold brochure developed by Illinois-Indiana Sea Grant.

Volunteers put together bags of giveaways for participants. The bags included an informational brochure on medicine disposal, chip clip, pens/pencils, pill box, mercury-free thermometers, a schedule of clinic times and computer recycling information. Volunteers from Sangamon County Department of Public Health, the City of Springfield and University of Illinois-Springfield students helped staff the event.

The collection took place from 8 am to 3 pm on Saturday, April 21, 2007, coinciding with Earth Day. The medicine drop-off was separated from the rest of the HHW collection. Residents were instructed to place their medicines in separate clearly marked containers, which were collected by Illinois EPA's contractors. For the safety of event staff, all publicity materials for the event instructed residents not to bring needles or sharps for disposal. After the collection, Illinois EPA's contractors took the medicines to an approved incinerator for disposal.

Collection Site: The State Fairgrounds served as the drop-off point for medicines and all other household hazardous waste. The last ten HHW collections have been held here, so county residents have become accustomed to using this site and it typically provides good traffic flow and convenient location. In 2007, due to other events taking place at the State Fairgrounds, traffic was very busy.

Key Motivation: Organizers aimed to promote public health by protecting against accidental poisoning and drug abuse. They also aimed to prevent pollution of the region's waterways.

Organizing Body: Sangamon County Department of Public Health

Partners:

Illinois Environmental Protection Agency
Illinois Pharmacists Association
City of Springfield
University of Illinois-Springfield
Illinois-Indiana Sea Grant

Level of Implementation: The collection was organized at the county level.

Cost:

- Illinois EPA provided for the transportation and disposal of the collected medicine waste.
- Funding for printing flyers and brochures came through Illinois-Indiana Sea Grant. Sea Grant also sponsored Sangamon County's radio and newspaper ads promoting the collection (approximately \$2500 total).
- The Illinois Pharmacists Association assisted with distribution of flyers to all pharmacies and nursing homes within Sangamon County.
- Volunteers provided in-kind support by donating their time to staff the event.

Outcome: About 2,800 people dropped off items at the HHW collection in 2007, and about 300 of them brought medications for disposal. Approximately seven 55-gallon drums of medications were collected at the single-day event. This included 8 large shopping bags of medicine received from a retired disabled military veteran.

In 2008, nine 55-gallon drums of medicines were collected at the annual HHW collection that drew a combined 1,500 participants. In 2009, only medicines were collected at the event; 500 participants brought in enough medicines to fill 19 30-gallon drums.

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Maine

Program Overview: The Safe Medicine Disposal for ME program provides Maine's residents with a safe disposal option for unused and unwanted medicine. Free medicine mailback envelopes are available at participating sites. This program is funded through an allocation from the Fund for Healthy Maine administered by the Maine Drug Enforcement Agency.

Under this system, consumers use prepaid mailing envelopes to send their unwanted pharmaceuticals to the Maine DEA. The envelopes are made available to the public at various locations including pharmacies, physicians' offices, and post offices.

Maine also created the U.S. National Registry for Unused and Expired Medications (USNRUEM) to help unify and streamline its efforts. Through this registry, all drug return or take-back programs and pilots have an opportunity to provide data to a national registry in Houston, Texas which has been operational since January 2005. Data collected from this registry will help guide policy makers regarding pharmacy policy, patient education and safety, and prescribing options. An example of the USNRUEM [Questionnaire for Returned Medications by Individual Donor](#)[®] is available in [Section 3](#), along with [other data collection forms](#).

From the website: <http://www.safemeddisposal.com/>

Safe Medicine Disposal for ME represents the first program of its kind in the nation. The Center on Aging and its statewide and national partners received funding from the United States Environmental Protection Agency to pilot a prescription medicine disposal program by mail. The program is now funded through a Fund for Healthy Maine allocation to the Maine Drug Enforcement Agency. This program will provide postage-paid envelopes and participant surveys to interested individuals throughout Maine.

WHAT ARE THE OBJECTIVES OF SAFE MEDICINE DISPOSAL FOR ME?

1. Create a centralized mail-in collection point for disposal of unused medicine, allowing researchers to analyze the type and quantity of medicine that is accumulating in the homes of Maine residents.
2. Use program research to inform prescribing policy and practice in Maine
3. Develop an educational outreach campaign to inform Maine's older adults and caregivers about the risks to keeping unused medicine in the home, as well as the benefits of safe medicine disposal.

WHAT HAPPENS TO THE MEDICINE?

All envelopes with the unused medicine and completed surveys will be returned to the Maine Drug Enforcement Agency for safe storage. The Maine Drug Enforcement Agency will oversee the cataloging and disposal of returned medicine.

Additionally, Maine's mail-back program was implemented to help the state save money in Medicaid pharmaceutical costs. Since every returned prescription medication represents a wasted health care expenditure, a careful analysis of which medications are not taken by patients may provide important clues about ways to eliminate wasted health care dollars. This potential in Medicaid savings could make Maine's Unused Pharmaceutical Return Program an attractive model for other states.

Organizing Body: Maine's Unused Pharmaceutical Disposal Program is administered by the Maine Drug Enforcement Agency.

Outcome: Maine's Mailback program is currently finalizing its data reports on collection volumes via the mailback envelopes. To view preliminary results, go to:
<http://www.safemeddisposal.com/documents/DisposalPanelKayeCrittenden10-19-09.pdf>

Other: Maine has recently passed legislation that requires a 15-pill limit on first-time prescriptions for Medicare patients.

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Nationally available Mail-back Program

In 2009, Sharps Compliance Inc. launched a program called TakeAway™ to provide a prepaid mailer for individuals to return unwanted medicines (non-controlled only). The envelopes are sold individually or in larger volumes on the Sharps website:

http://www.sharpsinc.com/shopping/index.php?main_page=index&cPath=70

The website describes this new approach as:

“The Sharps' TakeAway&trade System is the quick, easy solution to proper disposal of medications, other than controlled substances. Contact your pharmacist regarding the disposal of controlled substances. Protect your patients - and the environment - by ordering today.

- Convenient turn-key solution includes shipping and regulated disposal
- Accepts both medication cards and vials so no more popping medications from blister packs
- No hidden costs or fees, simply fill it and send it back for destruction”

The program also has larger containers available for larger residential collection programs. All containers are mailed via U.S. mail to a facility in Carthage TX where law enforcement witnesses the incineration.

Iowa has launched a pilot program in November 2009 and is providing the Sharps Inc. containers/envelopes to more than 300 pharmacies. The program was initiated through legislation and is being administered by the Iowa Pharmacy Association and Sharps Compliance Inc. The pilot program is being paid for with \$160,000 in state funds.

Wisconsin

Wisconsin Old Medicines Mail Back Pilot - Final Report to U.S. EPA GLNPO February 2009

The primary purpose of the Wisconsin Old Medicines Mail Back Pilot was to establish an efficient collection system for pharmaceutical waste from consumers. Below is a summary of the goals, outcomes, and benefits achieved during the project.

Objective One: to conduct a six-month pilot mail back program utilizing Capital Returns reverse distribution infrastructure.

Implementation of the pilot mail back program began on May 9, 2008. With the cooperation of the target counties of Winnebago and Waukesha, an aggressive outreach and public relations effort was launched. This included:

- utilization of Capital Returns' public-relations' firm to garner both national and statewide publicity through newspapers and radio;
- distribution of posters and handouts to over 100 pharmacies in the target area;
- establishment of a pilot subcommittee to assist in outreach efforts; and
- publication of newsletter articles and wastewater treatment inserts, announcing the availability of the program.

As part of this effort, Capital Returns trained call-center staff in the protocol for handling consumer medicines. At 800 number was established, which provided easy access for consumers to obtain instructions on how to package their old medicines, as well as which materials were acceptable. Only non-controlled medicines were accepted during this pilot due to lack of the United States Department of Justice Drug Enforcement Agency approval. Results include:

- A total of 1730 households returned medicines through the project period. A few hundred additional informational calls were received as well.
- A wide variety of materials have been sent in, with maintenance prescription medicines being the primary product.
- Eighty percent of program participants resided in Waukesha County.

Due to the development of an efficient call in system, the UW-Extension and Capital Returns were able to extend the period of this pilot until December 31, 2008.

Objective Two: to design and print handouts for use by community household hazardous waste programs and pharmacies on best management practices for old medicines.

As mentioned above, a poster was developed by the UW Extension Environmental Resources Center informing consumers of the new program. In addition, 3" x 5" handouts were developed, which were easy to distribute by pharmacists.

Poster distribution included the direct mailing of posters by the UW Extension to the smaller pharmacies, and distribution by Capital Returns to the larger pharmacy chains through the regional district managers. In addition Winnebago County nursing staff distributed posters to

community organizations, senior centers, etc. Finally, Waukesha County worked with wastewater treatment operators to include a tag line about the program as part of the quarterly bill.

Objective three: to record types and quantities of waste generated and cost for management of old medicines generated in the pilot program.

Capital Returns invoiced UW-Extension for \$20,000 in total program costs for the period through 2008. Due to the nature of the program and good will provision of in-kind services, specific costs were estimated to include:

- 70% of the costs were associated with materials packaging, shipping to and from the consumer, processing and incineration.
- 20% of the costs were for the operation of the call center and 800 service, and
- 10% of the costs were related to administrative components of the program.

In addition, the City of Brookfield was invoiced for an additional \$10,000 to cover the above expenses. Finally, UW-Extension incurred a cost of \$900 for printing and distribution of posters and pharmacy inserts.

A total of 15,164 items were returned during the project period, with 81% of the materials generated by Waukesha County residents.

Objective four: to evaluate the effectiveness of the pilot program, as well as awareness of key issues with pharmaceutical waste.

The UW River Falls Survey Research Center is currently implementing a comprehensive evaluation of this project, which will be completed in March 2009. This effort includes conducting two parallel surveys: one of randomly selected program participants in the program and the second, a random sample of the general public in the two counties.

In summary, the Wisconsin Old Medicines Mail Back Pilot has presented a number of challenges and opportunities. It has clearly demonstrated that the mail back model is a workable solution for old medicines and that it can serve as a national model. Key strengths of the program have included the involvement of a wide spectrum of stakeholders, the cooperation of numerous pharmacies, a steady call-in rate of participation, and a good rate of return of old medicines. Challenges encountered in implementing this project have included maintaining pharmacy participation throughout the project period and a low level of participation by the residents of Winnebago County. The follow-up evaluation will provide additional information regarding these challenges.

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Illinois-Indiana Sea Grant Education Initiative

Students as Agents for Change: Informing Communities about Proper Disposal of Unwanted Medicines

Program Overview and Key Motivation: In response to a growing national concern about improper disposal of unused or expired medicine and medicine misuse, educators from the University of Illinois Extension/Illinois-Indiana Sea Grant Program are creating two pilot education projects that target youth audiences.

Organizing Body: Illinois-Indiana Sea Grant Program/University of Illinois Extension

Partners: Prescription Pill Drug Disposal Program (P²D²), Purdue University Extension, Purdue University Department of Youth Development and Agriculture Education

Level of Implementation: Illinois-Indiana Sea Grant extension educators identified two target youth audiences to receive this information about improper disposal of unused or expired medicine and medicine misuse: high school students and 4-H youth. Two curriculum-based publications are in development for these youth audiences. The first is *The Medicine Chest: A collection of safe disposal curriculum activities and service-learning resources* (<http://www.iisgcp.org/education/MedicineChest.pdf>), a compilation of multidisciplinary, standards-based classroom lessons, sample stewardship activities, and background information for teachers and high school students. Included activities demonstrate how the improper disposal of unwanted medicines can be harmful to people, pets, and our waterways.

As they engage in these community stewardship activities, students will serve as “agents for change” in people’s habits to improve the quality of our waters. Students will develop lifelong skills as they provide useful information about medicine disposal to family members and various community sectors. Students who actively take part in *The Medicine Chest* activities will be equipped to deliver resource protection and health and safety messages to help people make conscientious decisions when disposing of medications and other household chemical products.

An important component of *The Medicine Chest* is the sample P²D² Program lesson plans developed by ecology, civics, language arts, health education, foreign language, music and art teachers at Pontiac Township High School (aligned with both Illinois and Indiana State Academic Standards, and with National Science Education Standards). High school teachers are also provided with numerous multidisciplinary approaches on how to engage students in successful service-learning projects and how to gather data from research-based background information, including Illinois-Indiana Sea Grant’s Disposal of Unwanted Medicines toolkit.

The second publication targeted to 4-H leaders and youth members is the 4-H Guide, *Disposal of Unwanted Medications*. Illinois-Indiana Sea Grant is collaborating with authors Natalie Carroll Purdue Extension Specialist and Professor of Youth Development and Ag Education and Whitney Siegfried, Graduate Student, Purdue University Extension to create this guide aimed at high school-aged 4-H’ers. Through experiments, simulations, research, and discussion activities, youth will understand why chemicals from medications are being found in the environment; the harm these chemicals can cause; and what can be done about it.

Five inquiry-based lessons are included in the guide:

- *So, what's the big deal?* A filtration experiment that teaches about wastewater disposal.
- *What are the issues?* Conducting research to learn about the history of disposal of unused and expired medicine; Taking a poll of citizens' disposal activities.
- *What should I be concerned about?* Using online resources to acquire the latest data and to learn about the medications of primary concern; Preparing a report that describes contaminants found in local waterways.
- *What are my options?* Act upon the better alternatives and work to reduce flushing of medicines in their communities by investigating alternatives for proper disposal of expired and unused medicine and brainstorming ways to provide community education.
- *How can I let other people know about these issues?* Suggestions for how youth can share their knowledge through projects such as speeches, displays, demonstrations, mentoring a younger 4-H member, and outreach to older adults.

Illinois-Indiana Sea Grant's strategic collaborations with scientists, outreach specialists, educators, and curriculum specialists have yielded many benefits. Illinois-Indiana Sea Grant is well positioned to deliver education resources; conduct professional development training for both formal and non-formal educators, with the ultimate goal of providing youth with the necessary skills to take action, engage and inform others, and create awareness about an important topic that will help improve people's health and safety, as well as the sustainability of our living aquatic resources.

Outcome: Both *The Medicine Chest* and the *Disposal of Unwanted Medications* 4-H guide are in final review; expected printing and distribution in Spring 2010. Evaluations of the effectiveness and impacts of the guides will be forthcoming.

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Hospitals for a Healthy Environment (H2E) (now a part of Practice Greenhealth)

Program Overview: Hospitals for a Health Environment (H2E) began a national movement for environmental sustainability in health care. H2E was based on the vision of a healthy health care system—a system that embraces safer building products, clean air, energy and water efficiency, safe working practices, and a commitment to public health demonstrated through waste volume and toxicity reduction. The program became a part of Practice Greenhealth, “the nation’s leading membership and networking organization for institutions in the healthcare community that have made a commitment to sustainable, eco-friendly practices. Members include hospitals, healthcare systems, businesses and other stakeholders engaged in the greening of healthcare to improve the health of patients, staff and the environment.”

Through a U.S. EPA grant in 2004, H2E was able to develop a comprehensive pharmaceutical waste management blueprint. The manual, published in April 2006, and updated in 2008, addresses the regulations related to pharmaceutical disposal, best management practices for non-regulated pharmaceutical waste, ways to minimize pharmaceutical waste, current disposal practices, as well as the next steps on how to launch a national program.

Key Motivation: H2E began its efforts regarding the reduction of pharmaceutical waste to increase the health of patients, workers, their communities, and the global environment.

Organizing Body: H2E was jointly founded by the American Hospital Association, the U.S. Environmental Protection Agency, Health Care Without Harm, and the American Nurses Association.

Partners: Practice Greenhealth collaborates with multiple health care facilities throughout the United States. Education programs are now available through the Teleosis Institute at: www.teleosis.org

Level of Implementation: Practice Greenhealth is a nationally-coordinated membership program which seeks to provide education, tools, and information about best environmental practices to health care professionals in multiple states to improve operational efficiency, increase compliance, and improve the health of their communities.

Outcome: H2E published “Managing Pharmaceutical Waste: A 10-Step Blueprint for Health Care Facilities in the United States” in April, 2006 and the document was updated in August 2008. This manuscript, which is available to the public via the internet at http://www.practicegreenhealth.org/page_attachments/0000/0102/PharmWasteBlueprint.pdf can be used as a resource nationwide. Backed by the U.S. EPA, this document provides a credible guide that is applicable to any health care facility.

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Product Stewardship Institute (PSI)

Program Overview: The Product Stewardship Institute (PSI) is a national non-profit membership-based organization located in Boston, Massachusetts. PSI works with state and local government agencies to partner with manufacturers, retailers, environmental groups, federal agencies, and other key stakeholders to reduce the health and environmental impacts of consumer products. PSI takes a unique product stewardship approach to solving waste management problems by encouraging product design changes and mediating stakeholder dialogues¹.

In Spring 2005, five local government agencies provided initial funding for PSI to conduct the first phase of a potential national dialogue on unwanted/waste pharmaceuticals. PSI is in the process of interviewing key stakeholders for inclusion in its Product Stewardship Action Plan. This action plan was focused on unwanted/waste pharmaceuticals from households and long-term care facilities (nursing homes, hospice care, etc.), rather than on personal care products or non-pharmaceutical endocrine disruptors. Its main goal is to develop a nationally coordinated system for the management of unwanted pharmaceuticals that allows for multiple solutions to reflect regional differences.

From the PSI website:

“Over the past two years, PSI has received funding from multiple state and local agencies to develop product stewardship approaches for the end of life management of unwanted/waste pharmaceuticals. The primary goals of this project include evaluating the need for a nationally coordinated system for the management of unwanted/waste pharmaceuticals that allows for multiple solutions to reflect local/regional differences, and increasing the safe, legal, and environmentally protective collection and/or disposal of unwanted/waste pharmaceuticals through the development of best management practices. PSI drafted a Project Summary as a tool to develop consensus among diverse stakeholders and used this document as the foundation for a Pharmaceuticals Product Stewardship Action Plan which incorporates multiple key stakeholder interviews and other research. The main goals of the PSI multi-stakeholder dialogue are to increase awareness and to create a national, sustainable system for the end of life management of waste/unwanted pharmaceuticals. “

Key Motivation: PSI cites several reasons for their initiatives addressing the proper management of unused pharmaceuticals that typically enter the municipal solid waste stream, municipal wastewater, or residential septic systems. These include:

- Pharmaceuticals are ubiquitous in our lives;
- Ongoing studies reveal that pharmaceuticals are entering the environment;
- Some classes of pharmaceuticals can act as endocrine disrupters, which have been linked to abnormalities and impaired reproductive performance in some species;
- Currently, a national collection program for unwanted pharmaceuticals is inhibited by various regulations.

¹ <http://www.productstewardship.us/>

Organizing Body: The Product Stewardship Action Plan, which was overseen by the PSI, involved the following parties:

- Pharmaceutical companies/associations that focus on:
 - Research & Development
 - Generic Drug Manufacturing
- Government (city, county, state, and federal); PSI received considerable assistance and funding from the local government agencies of King County, WA, Santa Monica, CA, and San Francisco, CA.
- Pharmacies
- Reverse Distributors
- WWTP and Water Treatment Associations (San Benito County Integrated Waste Management Agency (CA) and the Central Vermont Solid Waste Management Agency)

Level of Implementation: The PSI project will provide a national umbrella for local pilots such as those conducted by NERC and the Washington Department of Ecology. By doing so, PSI will help move toward a coordinated, comprehensive solution. By coordinating efforts and sharing results, PSI will save time and money for all those working on managing pharmaceutical wastes.

PSI has 4 working groups:

- Source Reduction Workgroup
- Joint Research Workgroup
- Regulations Workgroup
- Collection and Disposal Workgroup

Outcome: PSI's project is comprised of three phases.

Phase I:

- Conduct literature search
- Identify and summarize existing efforts
- Identify and interview key stakeholders; invite participation in national dialogue
- Develop *Product Stewardship Action Plan for Unwanted/Waste Pharmaceuticals*
- Post *Action Plan* and project materials on PSI website

Phase II:

- Convene four national dialogue meetings with key stakeholders
- Convene workgroups between meetings
- Develop priority agreements with key stakeholders
- Promote and disseminate project results through multiple venues

Phase III:

- Jointly implement priority projects and initiatives

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Other Countries' Programs

Australia

Program Overview: Australia's Return Unwanted Medicines (RUM) Project, initiated in July 1998, is a permanent, national, government-financed program that provides for unwanted and expired medicines to be collected by community pharmacies. The program was launched in full force after a Return Unwanted Medicine Week beginning on December 1st, 2002.

Commonwealth funds currently cover these costs with significant support from the pharmaceutical industry. Community pharmacies collect these medicines at no cost to consumers, and pharmaceutical wholesalers have agreed to a dramatic discount in charges for delivery and collection of containers to pharmacies. Residents can return unwanted or expired medicines to any pharmacy at any time. The returned medicines are then disposed of safely by the pharmacies; they are in no way reused or recycled. The program has established protocols on how to manage the waste. It also relies heavily on support from state and local government agencies to initiate consumer awareness campaigns and produce media releases.

The RUM Program has achieved tremendous success due to the clarity and simplicity of the program. Consumers are simply asked to bring expired or unwanted medicines to any pharmacy where the pharmacist collects them in a special bin for correct disposal.

Sites: All unwanted and expired pharmaceutical products can be returned to any pharmacy at any time. The RUM Program incorporated over 5,000 pharmacies throughout Australia.

Key Motivation: The RUM Project was implemented as a result of concern for both human and environmental health. The RUM website, www.returnmed.com.au, cites the following three reasons for initiating the program:

- In an average week, around 50 children are admitted to the hospital after swallowing medicines not intended for them. Additionally, according to a report published in the Australian Institute of Health, "76% of child medicine poisoning cases occur in the home."
- The Australian population aged 65 and over is expected to double by 2051. Such individuals use far more medications, and proper pharmaceutical disposal will reduce the rate of self diagnosis and treatment of new ailments with left over medicines.
- Unwanted chemicals are often dumped in the toilet, down the sink, or thrown out in the trash, which can harm the environment.

Organizing Body: The RUM project was organized, and is funded, by the Commonwealth Department of Health.

Partners: The RUM Project has also been supported by the Commonwealth Department of Health and Aging, the Pharmacy Guild of Australia, the Pharmaceutical Society of Australia, and the Australian Institute of Environmental Health. It is also widely supported by the pharmaceutical industry in Australia.

Level of Implementation: The RUM project is now enacted on a national level. However, the initial medication return program, known as the National Return & Disposal of Unwanted

Medicines Limited, a not-for-profit company, was originally registered exclusively in South Australia.

Cost: The program has a budget of \$5 million Australian dollars (US \$3.75 million) to operate from 2001 to 2006. Annually, the project costs US \$750,800 or \$1.47 per pound of pharmaceutical waste.

Outcome: Between 1998 and 2002, 1,675,513 pounds of medicines were collected and destroyed through the RUM Project—enough to overflow an Olympic-sized swimming pool. In 2005 alone, the RUM project collected 696,241 pounds of pharmaceutical waste, or 413 million pills, and served 21 million people.

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Canada-British Columbia

Program Overview: The pharmaceutical industry established the Medications Return Program (MRP), formerly called British Columbia EnviRx, in November 1996. It began as a voluntary program, but the industry eventually requested that pharmaceutical stewardship be made mandatory through its inclusion in the Post-Consumer Residuals Stewardship Regulation. This ongoing program is administrated by the Residuals Management Group Ltd. with funding from the Post-Consumer Pharmaceutical Stewardship Association. Both urban and rural pharmacies are participating. The user-friendliness of the program is key to its success with an easy and on-demand pick-up schedule. Returned pharmaceuticals are tracked through shipping labels to ensure safety.

The MRP accepts all prescription drugs, nonprescription medicine, herbal products, vitamin and mineral supplements, and throat lozenges. It does not accept sharps, cosmetics, antiperspirants, antiseptic and medicated skin care products, contact lens disinfectants, sunscreens, mouthwashes and toothpastes. Also, physicians' offices and hospitals are not permitted to use this program; it is expected that they will contract with reverse distributors or otherwise take responsibility for the disposal of their unneeded medicines.

For more information on the Medications Return Program, please refer to www.medicationsreturn.ca.

Sites: A total of 856 pharmacies throughout British Columbia participate in this national program; these pharmacies are located in both rural and urban areas.

Key Motivation: The MRP derives from a true “cradle to cradle” philosophy in that “ecology of health” is the central focus. The MRP was formed to balance the concerns and objectives for ensuring or improving the health of the environment, consumer, and economy. The MRP has been embraced by Canada's National Association of Pharmacy Regulatory Authorities (NAPRA) for a number of reasons, including consumer/child safety (accidental poisonings, unwitting consumption of expired product or product prescribed for someone else), reduced costs (encouraging purchase of manageable drug amounts that are fully consumed), improved therapeutic outcomes, and reduced potential for environmental damage.

Organizing Body: The Medications Return Program is administrated by the Residuals Management Group Ltd.

Partners: The MRP is also administered by the Post-Consumers Pharmaceutical Stewardship Association (PCPSA) and funded by brand owners with the support of the Canada's Research Based Pharmaceutical Companies (R & D), Canadian Generic Pharmaceutical Association (CGPA), NDMAD Advancing Canadian self-care, and other brand owners not affiliated with these associations.

Level of Implementation: The Medications Return Program has been implemented on a national level. However, each province has taken a slightly different approach to the issue and allows different types of pharmaceutical products to be collected. British Columbia, Alberta, Ontario, and Prince Edward Island have taken the lead on the MRP.

Cost: The total cost of the Medications Return Program is US \$170,500 per year or US \$3.25 per pound of unwanted pharmaceutical waste. In order to ensure consumers are not discouraged from properly disposing of their waste medications, brand-owners are not permitted under the regulation to charge any fees to return regulated product residuals. The pharmaceuticals industry has chosen to fund the program directly and no fees are assessed to consumers at the point of sale.

Outcome: For the period April 2000 to December 2000, industry reports that over 550 retail pharmacy outlets, representing over 75% of all pharmacies in British Columbia, accepted unwanted and expired medications from consumers. For the same nine-month period, the program collected 9878 pounds for a four-year program total of 72,107 pounds.

In 2001, the MRP was revised, and the re-launch included a new communications plan that included consumer brochures and posters for pharmacies. Improved public awareness has resulted in an increase of residual medications being returned to participating pharmacies. Since the re-launch of the program, the volumes collected have grown by 35%. In 2004, the program, which serves approximately 4 million people, collected 52,800 pounds of unwanted pharmaceuticals, or 43 million pills. In 2005, 39,600 pounds of medications were collected under the program.

Contacts: Recycling Hotline of British Columbia
 Greater Vancouver (604) 732-9253
 Outside Greater Vancouver 1 (800) 667-4321

European Union

Program Overview: Eleven European Union member nations have pharmaceutical take-back systems, all of which allow residents to drop unwanted pharmaceuticals at pharmacies. More than half of the European nation systems are operated by the pharmaceutical industry or by pharmacies; the rest are paid for by municipalities. Each country has a different approach to managing these programs.

Five countries (Belgium, France, Luxembourg, Portugal, and Spain) have take-back schemes operated by the pharmaceutical network as a whole. The remaining six countries (Denmark, Finland, Germany, Italy, Sweden, and U.K.) only conduct take-back programs through pharmacies in collaboration with a public or private waste contractor. Of these 11 nations, two have had particular success in the past two decades. These include:

Italy: In the late 1980's, Associazione Indennizzo Resi (Ass Inde) was established in Italy as an independent company to run an inter-sector agreement to refund the distribution chain, on behalf of pharmaceutical manufacturers, for the cost of expired, damaged, or recalled medicines. Italy's take-back program involves collection at more than 16,000 pharmacies. The program operates on a six-month cycle. Every January and July, wholesalers and pharmacies clear their shelves of out-of-date or damaged stock and draw up an inventory on a designated form. The pharmaceutical products are transported by a licensed carrier to Ass Inde's offices in Rome, where the packaging materials are separated, sealed in bags, quarantined for six months, and then shredded. The products themselves are incinerated.

France: France operates a structured, industry-funded system for recalling pharmaceutical waste. The system is run in a collaborative manner between manufacturers (265), wholesalers (6), and community pharmacies (22,590), but without any refunds. The scheme, run by an association known as Cyclamed, has both an environmental and a humanitarian aim. Through their local pharmacy, households are invited to return all unused medicines and packaging, even empty packs. Bags and leaflets handed out at the time of dispensing and window stickers and posters reinforce this message. Partially used, expired, or damaged stock is placed by the pharmacist in a "destroy" box. Products that could possibly find use by medical charities in France or overseas are stored in a second box. When full, the "destroy" boxes are picked up by a wholesale company on its delivery rounds and put into an isolated, closed container at the warehouse. Wholesalers then arrange for a waste contractor to collect containers when full for incineration.

The scope of take-back schemes is normally limited to medicines when the system is financed by pharmacies or municipalities. Where industry must comply with national regulations deriving from the packaging wastes directive, then the take-back scheme is expanded to packaging (including empty packs); this is financed by industry.

Key Motivation: The 11 member nations that currently support pharmaceutical take-back programs believe these programs have significant practical value in terms of drug safety, the environment, economics, and in the sense of partnership they bring to members of the medicines of the supply chain.

Organizing Body: The take-back schemes implemented throughout the European Union are primarily organized by the European Federation of Pharmaceutical Industries and Associations

(EFPIA), which is composed of 28 national pharmaceutical industry associations and 44 leading pharmaceutical companies throughout Europe.

Partners: Europe's take-back programs are also organized with the aid of the European Commission Directorate General Environment. The Environment DG is one of 36 Directorates-General and specialized services which make up the European Commission. Its main role is to initiate and define new environmental legislation and to ensure that measures which have been agreed upon are actually put into practice in the Member States.

Cost: When operated by the pharmaceutical network as a whole, costs are apportioned between pharmacists, wholesalers, and industry according to their role in the distribution system: industry consequently pays for external costs (mainly incineration) with the exception of Luxembourg, where no pharmaceutical industry exists and the Ministry of the Environment consequently pays for these costs.

When operated by pharmacies only, the system is financed by municipalities (Finland, Italy, and U.K.), pharmacies where they are responsible by law (Denmark and Sweden), or by industry (in Germany where products have to bear costs related to recycling of packaging wastes).

Under Italy's take-back system, the major expenses (data from 1999) are as follows:

- Television advertising = US \$863,578
- Incineration = US \$844,403
- Waste Transport = US \$614,111
- Waste Containers = US \$556,538
- Other forms of Communication = US \$422,163

Outcomes:

Italy: By 2000, more than 132 million unwanted packages of pharmaceuticals had been collected for safe disposal. Products with a shelf life of five years are reimbursed at 70% of the purchase price; those with a shelf life of two years or less, and all damaged goods, are reimbursed at 100%. In 1998 alone, about US \$39,218,821 was refunded to the country's 280 wholesalers and 16,000 pharmacies. Refunds covered about five million of the approximate seven million packs returned that year.

France: 1995 was the first year the system was in place. Since that time, the quantity of pharmaceutical waste collected yearly has increased. In 1995, 13,800,000 pounds of unwanted/expired medications were collected. By 1998, the annual total had risen to 20,600,000 pounds. While the majority of the collected medications were incinerated, in 1998, 1,926,000 pounds were redistributed to poor people in France. Ten charities benefited overall, with three accounting for 84% of the total weight: Order of Malta (790,000 lbs), Pharmaciens sans Frontieres (616,000 lbs), and Terre d'Amitie (212,000 lbs).