Disposal of Unwanted Medicines

A Resource for Action in Your Community

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Sea Grant
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5. State Legislation Regarding Disposal and Donation of Medicines

While the United States does not have national legislation to address medicine disposal and return programs, some states have issued laws or have bills pending that address these issues. This section summarizes this legislation and pending legislation and can serve as a reference for officials who wish to replicate such measures in their regions. National legislation is pending and several states have passed legislation that identifies responsibility for the cost of collection programs.

6. International Policy on Medicine Donations

Improper donation of medicines to humanitarian relief efforts has proven to be a major financial and logistics problem for aid organizations. The World Health Organization's *Guidelines for Drug Donations* is provided in this section.

7. Bibliography of Literature on Pharmaceutical Chemicals and the Environment

There is already a significant body of knowledge regarding the types and locations of pharmaceutical chemicals in waterways and the potential effects of these chemicals on wildlife. This section provides a bibliography of scientific journal publications and news reports related to this topic.

8. PowerPoint Presentation: Overview of the Issue

This presentation provides an overview of the issue of unwanted medicines, discussing the environmental and safety hazards related to unwanted medicines and describing the efforts underway to prevent unwanted medicines from being disposed of improperly. Speaker's notes and the PowerPoint presentation can be provided on a CD for community organizers and officials who wish to use this presentation as the basis for their own outreach.

Introduction

The fate of unused medicines is a rapidly emerging concern that spans a broad range of issues including human and environmental health, water quality, solid waste management, law enforcement, and the health care industry. Substances of concern include both prescription and non-prescription medicines, and this category is sometimes expanded to include cleansing agents, cosmetics, nutritional supplements, and skin care products. A common term used for this suite of compounds is pharmaceuticals and personal care products (PPCPs). There are thousands of products that fall into this classification; all of these substances are specifically designed to interact with biological processes and are widely used around the world. They can enter the environment when people dispose of medicines via trash or toilet, or after use when they are excreted in their original or metabolized form or rinsed off the skin in the case of topical applications (Daughton and Ternes 1999).

The Issue

Medicines are produced and prescribed in increasing volumes every year. In the United States, sales of over-the-counter medicines have increased by 60% since the 1990s[1]. In 2008, total sales for prescription medicines in the United States reached $291.5 billion, a 1.4 percent increase from 2007 (Ruiz 2009).With these increases comes concern about the fate and effects of these compounds in the environment. Recent studies have identified a wide range of pharmaceutical chemicals in rivers, streams, and groundwater nationwide (Kolpin *et al.* 2002, Barnes *et al.* 2008), and it has also been shown that some of these compounds are potentially harmful to aquatic organisms, affecting reproduction and development even at very low concentrations in some cases (cited in Daughton and Ternes 1999). The fate of pharmaceutical chemicals in sewage sludge is also of concern (Kolpin *et al.* 2002), as sludge from wastewater treatment is often applied to agricultural land as a fertilizer. The long-term impacts of medicine disposal on our health and the health of the environment are not fully known. However, unless action is taken, the quantity of these chemicals reaching our waterways will continue to increase as pharmaceutical usage increases. Thus, Illinois-Indiana Sea Grant recommends a precautionary approach to this issue.

So what can be done? The issues surrounding medicine disposal are complex. Improper disposal of unwanted medicines can pose a risk to children and pets. For example, medicines placed in the trash without taking precautions to secure the container, make the medication unpalatable, or disguise the content are potentially accessible to children and pets, sometimes resulting in unintentional poisonings. Medicines disposed with their original labels intact can result in identity theft and medicine theft. This is an especially important issue for the elderly, who are the biggest consumers of prescribed medicines.

In early 2007, the Office of National Drug Control Policy issued guidelines for proper disposal of prescription drugs, following on the heels of several states providing advice to their citizens. This guidance was most recently updated in October 2009 and is available at http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf. The three main components of the national guidelines are:

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

1. Don't flush medications down the toilet unless the label specifically instructs you to do so and instead,
2. Take advantage of community take-back programs or other programs that collect medicines at a central location for proper disposal. If a take-back or collection program is not available, then
3. Remove labeling from packaging and dissolve solid medications, mix with unpalatable items (kitty litter, coffee grounds, etc.) and seal in a bag before placing in the trash.

Several states have adapted these suggested guidelines and issued state-specific advice to ensure compliance with specific state hazardous waste and household waste regulations. Options such as mixing with plaster, crushing the pills, and locking up medication if it can be done safely until the next community collection have also been suggested. Several state guidelines provide information about how to determine if there are local collection programs in a state or community.

Disposal to trash is considered to be an interim solution because medicines placed in landfills are likely to slow the transport of the chemicals to waterways or sludge, but landfill leachate ultimately reaches wastewater treatment plants and local streams and rivers (Barnes *et al.* 2004). Illinois-Indiana Sea Grant believes that currently, the best disposal solution is incineration of medications in a regulated incinerator. There is, however, a very long list of hurdles to overcome before a national disposal plan can be implemented that is protective of humans, wildlife and pets and their shared environment. These hurdles include identifying safe and convenient medicine collection pathways and determining who will pay for this service, minimizing the need for disposal through smarter prescribing and smarter consumer choices to save healthcare dollars and resources.

The Illinois-Indiana Sea Grant resource kit, "Disposal of Unwanted Medicines: A Resource for Action in Your Community" was created to help communities design, establish and implement safe and legal unwanted medicines collection programs. One component of a successful program is identifying the best way to engage the community and let them know when the collection will occur and what can be brought to the event. Included in the kit are several examples of pamphlets, fact sheets and education materials that have been developed by communities and states as they wrestle with this complicated issue. The recommendations and advice vary because jurisdictions are finding different ways to deal with the fact that only interim solutions are available currently. These outreach materials can be adapted and used by other communities to save time and funds.

The good news about this issue is that it touches upon so many different aspects of our lives that there is no end of partners to join with to educate and reach out to the public. This issue impacts the elderly through medicine and identity theft issues, accidental poisoning, and health care costs. It matters to the police because prescription drug abuse by teenagers is on the rise. In 2008, 15.4 percent of 12th-graders reported using a prescription drug nonmedically within the past year (Johnston *et al.* 2009). Concerns for the safety of children and pets also can drive behavioral change. Furthermore, medications that go unused are a significant waste of health

care dollars. And for all of us, our health depends on the health of our environment, including rivers and streams and the creatures that live in them.

1. Background

1.1 Disposal of Unwanted Medicines

For many reasons, medicines are not always entirely used and therefore remain and may eventually expire in the hands of consumers or health care facilities. Some reasons for this include:

- Improvement of the patient's medical condition
- Patient or doctor decides to discontinue use of the medication due to side effects or lack of therapeutic effect
- Patient death
- Packaging contains more medication than the patient needs, e.g. with over-the-counter or prescription medicines bought in bulk

Disposal of unwanted medicines is an issue both for households and healthcare business such as hospitals, hospices, rehab centers, assisted living facilities, clinics, and pharmacies. Health care businesses disposal practices are regulated at the state and federal level. Some medications are classified as hazardous waste because they contain or are preserved with hazardous chemicals (mercury, preservatives, radioactive components) and therefore most states have specific regulations surrounding pharmaceutical disposal. The medicines that are disposed of by individual households are generally unregulated. The U.S. Environmental Protection Agency is currently considering including pharmaceuticals in the federal Universal Waste Rule set forth in 40 CFR part 273 which, if adopted by individual states, would allow for simpler easier management of household medicine waste. This document focuses on the medicines that are disposed of by individual households. We have provided a short section on the disposal practices of medical facilities because their practices may provide insight for community programs on different ways to approach the collection of unwanted medicines.

1.1.1 Disposal by Individuals

A 1996 survey (Kuspis and Krenzelok 1996) examined the expired medicine disposal habits in 100 pharmacies and 500 patients (Figure 1). The survey found:

<u>Pharmacies:</u>

- **97%** had established policies regarding the disposal of undispensed, expired medicines
- However, only **5%** had consistent recommendations for customers on medicine disposal

<u>Patients:</u>

- **54.0%** disposed of medicines in the trash
- **35.4%** flushed medicines down the toilet or sink
- **7.2%** did not dispose of medicines
- **2.0%** used all medicines prior to expiration
- **1.4%** returned medicines to the pharmacy

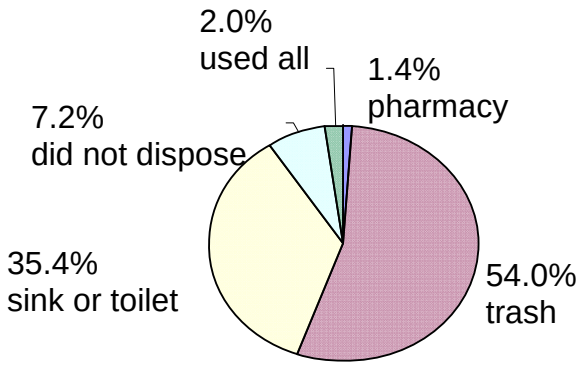

Figure 1: Patient disposal methods of unused medicines (from Kuspis and Krenzolek 1996)

1.1.2 Disposal by Health Care Centers and Pharmacies

Disposal of medicines by health care centers and pharmacies is regulated by states. For instance, Minnesota instructs its hospitals and other health care facilities to obtain approval from the local wastewater treatment plant before discharging any medicines to the sewer system.[2] Michigan regulates some types of hospital waste as hazardous waste, which requires incineration as the final treatment and does not permit sewering or landfilling.[3]

Large-scale generators of pharmaceutical waste may have market options for disposal of their unused drugs. Pharmacies and health care centers can contract with reverse distribution companies to remove their undispensed expired medicines. Reverse distributors sort the drugs; some are sent for disposal and others are returned to the manufacturers who give purchase credits for certain types of medicines. Reverse distributors do not process pharmaceutical products for reuse. While manufacturers may ultimately process returned medicines for reuse, most medicines returned to manufacturers are sent off-site for disposal by regulated incineration.[4]

Reverse distributors do not have hazardous or medical waste management or transfer station permits. Instead, they are treated as hazardous waste *generators* under the law. This is because unwanted medicines that are sent to reverse distributors may have financial value—a value that is only determined by the sorting process at the reverse distributor. Medicines sent to reverse distributors (and from reverse distributors to manufacturers) are treated as "products in commerce" because of this financial value, and thus are not subject to hazardous waste transportation and permitting requirements. The reverse distribution system is only available to consumers in the case of manufacturer or FDA recall of a suspected defective product.

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[2] Minnesota Pollution Control Agency, "Evaluating Pharmaceutical Wastes." August 2004. http://www.pca.state.mn.us/publications/w-hw4-45a.pdf

[3] Michigan Department of Environmental Quality, "Waste Management Guidance: Hospital Pharmacies." December 1997. http://www.deq.state.mi.us/documents/deq-wmd-hwp-hospital.pdf

[4] Charlotte Smith, quoted in Moran, K. 2004. "Household Pharmaceutical Waste: Regulatory and Management Issues." http://www.tdcenvironmental.com/HouseholdPharmWasteMgtIssuesFinal.pdf

In most of the U.S. there is no structured system for consumers to dispose of partially used or unused medicines. Locally organized, one-time collection events have provided an interim solution to the problem, but many people are calling for a disposal system that would be continuously available, such as a mail-back scheme or ongoing collections through pharmacies. See Section 2 of this resource kit for examples of large- and small-scale collection programs.

1.2 Risks of Unsafe Medicine Storage and Disposal

1. Accidental poisoning: Medicines are the most common poison exposure category in the United States, and unsecured storage or disposal via the trash is a significant source of accidental poisoning. In the United States, approximately 30 children under five years of age die as the result of unintentional poisoning annually (U.S. Consumer Product Safety Commission 2005). Furthermore, data from the National Electronic Injury Surveillance System also indicate that in 2003, an estimated 78,000 children under age five were treated for poisonings in U.S. hospital emergency rooms (U.S. Consumer Product Safety Commission 2005). Medicines account for 45% of these hospitalizations, and of these medicines, aspirin and other painkillers accounted for the most hospitalizations (11.8%) (Centers for Disease Control and Prevention 2005). Additionally, as the biggest consumers of prescription medicines, it is possible for senior citizens to misuse and self-prescribe medicines, using out-of-date medicines from past ailments to treat new, undiagnosed symptoms. Having a large number of medicines in the home can contribute to confusion over proper dosages and which pills to take when.

2. Diversion and drug abuse: Medicines are sometimes misappropriated for consumption or sale by family members and friends, workers in homes, and by burglars. Storing numerous medicines in the home or throwing excess medicines in the trash without first securing them can lead to this type of misuse. The National Survey on Drug Use and Health found in a nationwide study that 12% of young adults (ages 18-25) used prescription pain relievers non-medically in 2005 (Office of Applied Studies, Substance Abuse and Mental Health Services Administration 2006). Of these users, 67% obtained them from a friend or relative, as compared to 14% who had the medicines prescribed to them by a doctor. The 2006 “Monitoring the Future” survey conducted by the University of Michigan reported that although illegal drug use by American teens dropped more than 23% from 2001-2006, their abuse of medicines, both over-the-counter and prescription, was rising (Johnston et al. 2007).

3. Economic waste: Medicines thrown in the trash or flushed down the drain represent wasted health care dollars. Studies identifying the types and quantities of medicines that go unused could lead to better-informed prescription practices and better advice to patients on how to properly take prescriptions.

4. Improper medicine donations: In response to humanitarian crises, large quantities of medicines are sometimes donated internationally. If the donations do not match the need, or if the donated medicines are expired or otherwise unusable, significant disposal problems can arise overseas, as the receiving areas may have impaired waste treatment systems. Because there have been several cases where unusable medicines have been donated, in most cases with the best intentions, to international relief organizations during crises, the World Health Organization discourages donation of unwanted medicines from collection events (World Health Organization 1999). This

is especially important as environmental safeguards for proper disposal of unusual medicines may not be available in these countries.

5. Environmental impact: Waste discharged through sewage systems can contaminate water resources in the surrounding environment. Pharmaceutical chemicals in waterways pose a potential for deleterious effects on wildlife. Wastewater treatment plants (WWTPs) are not designed to treat chemicals in medicines. Therefore, when flushed down the toilet or sink, some pharmaceutical chemicals pass through the WWTP altered or unaltered and can enter rivers, lakes, living organisms, and groundwater (Daughton and Ternes 1999). Additionally, some of these chemicals remain in the sewage treatment plant's sludge, which is frequently applied to agricultural land as a fertilizer (Daughton and Ternes 1999).

Two examples of compounds in medicines that have been shown to impact aquatic life:
• Estrogens (and estrogen-mimicking compounds) are a group of steroid compounds that function as the primary female sex hormone. Even at low levels, estrogens can have a feminization effect on male fish, and therefore may decrease the reproductive capacity of affected species. (e.g. Nash et al. 2004)

• Antidepressants are designed to control or alter behaviors by inhibiting the uptake of key neurotransmitters such as serotonin, norepinephrine, and dopamine. Once released into the environment, they can have similar or unforeseen effects on aquatic species and have been demonstrated to affect the spawning behavior of shellfish (Fong 2001) and delay fish and frog development (Holmes 2003). They also have been observed to result in slower heart rates for the water flea *Daphnia,* which could indicate broader physiological effects[5].

Some pharmaceutical chemicals (e.g. anti-epileptics) persist in the environment; others are "pseudo-persistent"—they break down but are continually replaced because of widespread use. The concentrations of individual pharmaceutical chemicals detected in the influent of sewage treatment plants are typically in the range of a few parts per billion, while concentrations in treated effluent are usually lower, in the range of several hundred parts per trillion up to several parts per billion, depending on the chemical. As the effluent is diluted when it discharges into a river, the concentrations in waterways tend to range from undetectable to a few hundred parts per trillion. In sewage sludge, concentrations are sometimes much higher as the sludge is compacted.

Researchers have found that chronic exposure to low levels of pharmaceutical chemicals– within the same range of concentrations as has been observed in some waterways– can have significant effects on aquatic animals including fish (Palace *et al.* 2002, 2006) and lobsters.[6] At present, the greatest concern regarding pharmaceutical chemicals in the environment is their potential effects on small aquatic organisms. This is mainly because these organisms have short generation times, hence multiple generations are easily exposed. Because of this, there is a greater likelihood that effects will not be restricted to individual organisms but instead will accumulate over time to result in population-level effects.

[5] Rebecca Klaper. "Effects of Pharmaceuticals on Non-Target Organisms." Presentation at State of the Lakes Ecosystem Conference, Milwaukee, WI, November 2, 2006.
[6] Spanne, Autumn. "Human hormones hurt lobsters." The Standard-Times. Jan. 14, 2007. http://www.southcoasttoday.com/daily/01-07/01-14-07/01perspective.htm

Pharmaceutical chemicals identified in the environment are generally present in concentrations several orders of magnitude lower than the concentrations known to exert effects on humans. This makes direct human toxicity seem unlikely but does not rule out the possibility of subtler long-term effects that are harder to detect and the exposure is to a vast mixture of compounds that we are unable to measure (Sherer 2006). Some scientists believe that low-level exposures to numerous drugs with the same or similar methods of action may add up to larger effects on aquatic organisms, that certain combinations of medicines may act synergistically to produce disproportionately large effects, or that other unpredictable interactions between chemicals may occur. It is possible that there were other substances of potential concern in the water that were unobserved in these studies simply because researchers did not sample for them, or because there are currently no analytical techniques capable of identifying them. Much research remains to be done in this area.

1.3 Where are Pharmaceutical Chemicals Present in the Environment?

A recent United States Geological Survey (USGS) study analyzed 139 streams in 30 states and found 82 different organic wastewater contaminants, including pharmaceuticals and pesticides (Kolpin *et al.* 2002). Eighty percent of the streams they sampled had at least one organic wastewater contaminant. Furthermore, 75% of the streams tested had more than one contaminant present, 50% had seven or more, and 24% had 10 or more. However, these results are not necessarily representative of *all* waterways because sample collection was targeted to areas where these compounds were expected, namely downstream from urban areas and areas of livestock production. Since this study, further research has found pharmaceutical chemicals in ponds[7] and rivers[8] in many states and more studies are currently ongoing.

It is possible that there were other substances of potential concern in the water that were unobserved in these studies simply because researchers did not sample for them, or because there are currently no analytical techniques capable of identifying them (see Daughton 2003).

1.4 What are these Pharmaceutical Chemicals?

Types of human and animal pharmaceutical chemicals that have been identified in water bodies include (from Daughton and Ternes 1999):

- Hormones
- Antibiotics
- Blood lipid regulators
- Analgesics and anti-inflammatories
- Beta-blockers
- Antidepressants
- Antiepileptics
- Antineoplastics (used in chemotherapy)
- Tranquilizers
- Retinoids

[7] Standley, L. Presentation "Contamination of Surface Ponds on Cape Cod, MA, by EDCs and Pharmaceuticals from Septic-Contaminated Groundwater" at Northeast Water Science Forum, August 8, 2007.

[8] Furlong, E., P. Phillips, USGS; Lloyd Wilson, NYS DOH. Presentations at Northeast Water Science Forum, August 8, 2007.

- X-ray contrast media

The degree to which these and other medicines are destroyed at wastewater treatment plants can vary greatly depending on both the type of medicine and the treatment method used. Various treatment techniques can alter some medicines into different forms that may be more or less toxic; even chemicals that have been converted into non-toxic forms can sometimes revert to more dangerous forms in the environment.

1.5 How do Pharmaceutical Chemicals Enter the Environment?

Residential, commercial, and agricultural pharmaceutical chemicals follow two primary pathways to wastewater treatment systems (Figure 2):

- Metabolic excretion: Many pharmaceutical chemicals are biotransformed in the body. Biodegradation alters the chemical structure of their active molecules, which, in turn, often results in a change in their physical and chemical properties. Metabolism is frequently incomplete, and excretion rates range from 0 to 100%.[9, 10] This means that sometimes a significant fraction of the medicine is not absorbed into the patient's body and instead is excreted. In some cases, metabolic processes alter the medicine, creating a different chemical that may be more or less toxic than the parent compound and may revert back to the parent form in the sewage treatment plant or in the environment.

- Direct disposal: Disposing of unwanted or expired medicines can be a challenge for households. In the U.S., few formal guidelines are available for individual consumers on medicine disposal, and, consequently, most of their unused medicines enter septic tanks, sewers, or landfills.

[9] Kummerer, K. Pharmaceuticals in the Environment: Sources, Fate, Effects and Risks. Springer. 2nd Edition. 2004.
[10] Bound, Jonathon, and Nikolaos Voulvoulis. "Household Disposal of Pharmaceuticals as a Pathway for Aquatic Contamination in the United Kingdom." Environmental Health Perspectives. 113.12 (2005):1705-1711.

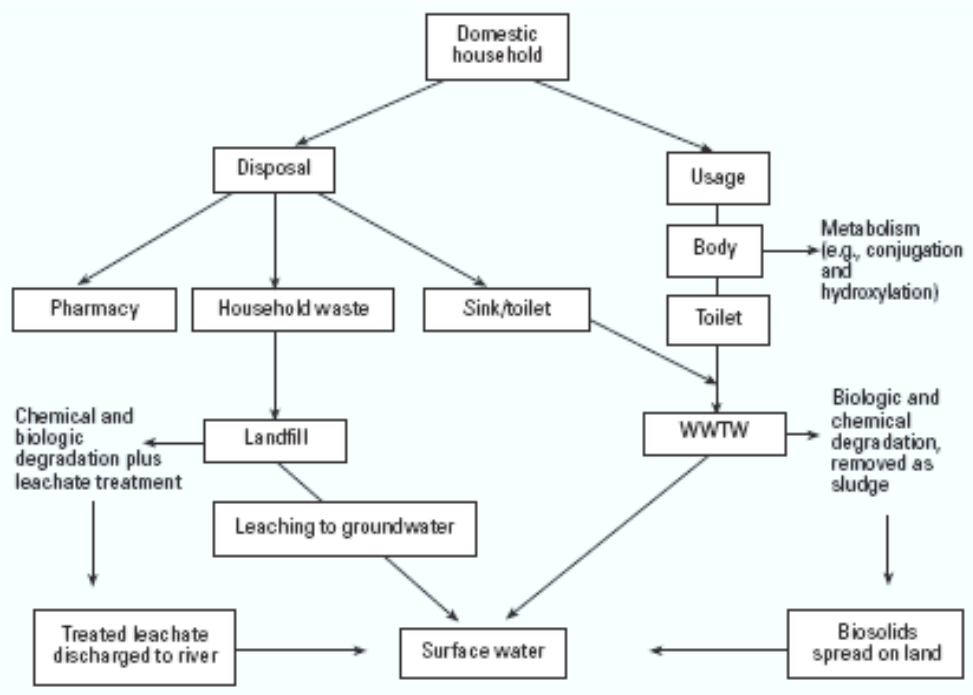

Figure 2. Pathways of drugs from households to the environment from Bound and Voulvoulis 2005

Once they have been discarded or excreted, pharmaceutical chemicals enter surface waters and groundwater through several pathways (Figure 3):

- Effluent from plants that treat household, industrial, and hospital wastewater
- Septic systems
- Runoff and/or groundwater from uncontrolled landfills or landfill leachate sent to waste water treatment plants
- Controlled industrial discharges
- Commercial animal feeding operations and aquaculture
- Surface application of manure and biosolids

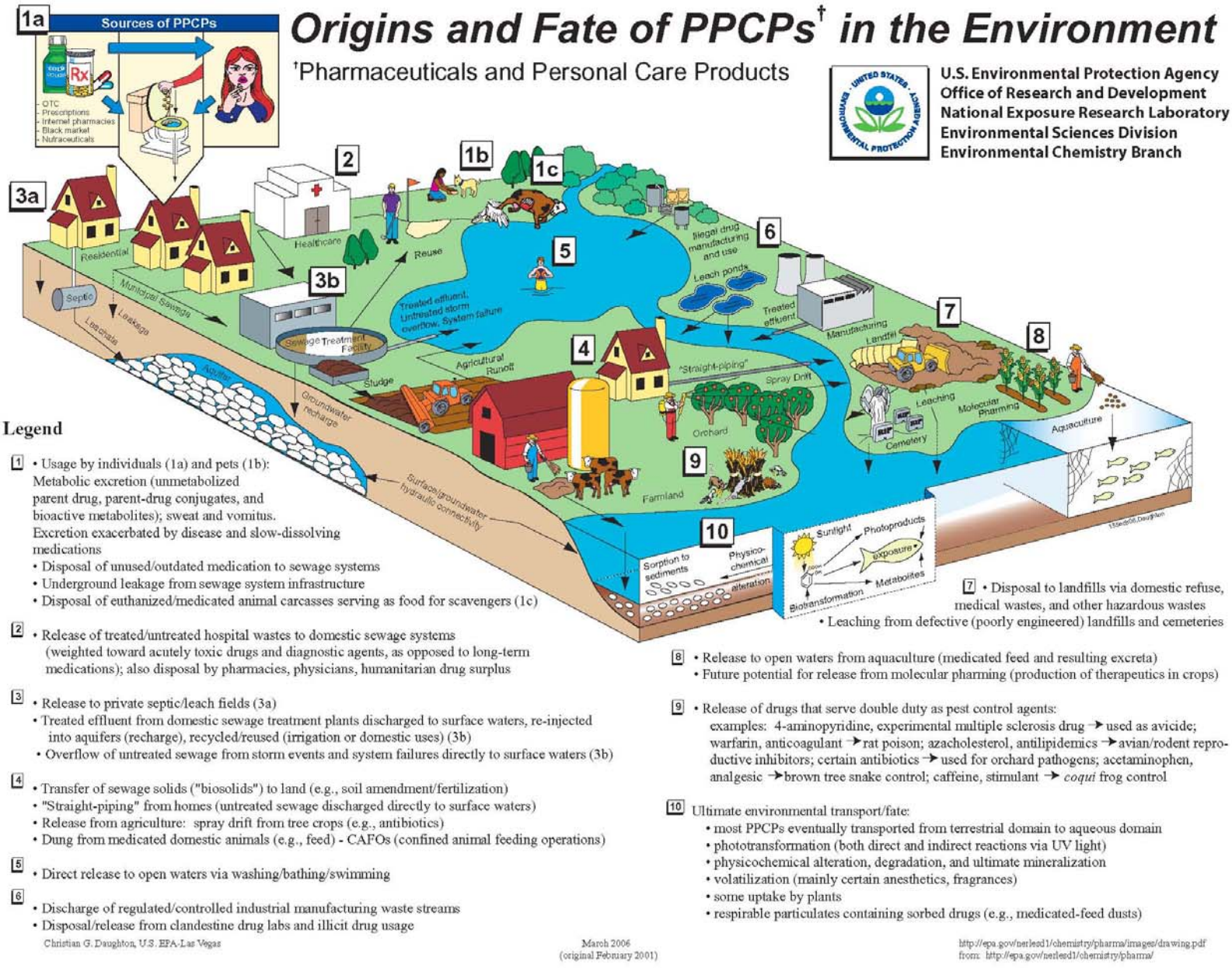

Figure 3. From U.S. EPA's website http://www.epa.gov/ppcp/pdf/drawing.pdf

In general, wastewater treatment plants were not designed to remove dissolved medicines from water. They were designed to remove solids, organic materials, and some nutrients such as phosphorus and nitrogen. At wastewater treatment plants, water goes through one, two or three stages of treatment, depending on the sophistication of the plant and the needs of the community served.

Primary treatment removes solids, which are either applied to land as fertilizer or sent to a landfill. The treated water still can contain dissolved and colloid organics and bacteria. If the

plant does no more than primary treatment, then the water is chlorinated to kill the remaining bacteria and discharged.

During secondary treatment, organic materials and nutrients are removed with the aid of bacteria in aerated tanks. After the bacteria are added, the wastewater flows to settling tanks where the bacteria settle out.

Various types of tertiary treatment are possible, depending on the composition of the wastewater. Typically, tertiary treatment uses chemicals to remove phosphorous and nitrogen from the water, but may also include filter beds and other types of treatment. Chlorine added to the water kills any remaining bacteria, and the water is discharged.[11]

Septic systems represent another source of unwanted medicines to groundwater and ponds, as they are also not equipped to break down pharmaceutical chemicals. Researchers have discovered some estrogenic chemicals in groundwater down-gradient of residential septic systems,[12] and new research indicates higher levels of these chemicals in ponds near areas of higher residential density.[7]

Stockyards and feedlots where animals are treated with steroids, hormones, antibiotics, and other veterinary pharmaceuticals are also significant sources of pharmaceutical chemicals to the environment. The chemicals are excreted by the animals directly onto the land, are dispersed via manure spreading, and are discharged into streams by runoff. Any of these routes may result in impacts to surface and groundwater.[13]

1.6 Conclusion

The release of pharmaceutical chemicals into the environment after they are excreted by humans and animals is inevitable without sweeping changes to wastewater treatment systems or to medicine manufacture and design. A wide array of changes in each of the many aspects of pharmaceutical manufacturing, distribution, prescribing, consumption, and disposal has been proposed for reducing the introduction of pharmaceuticals to the environment (Daughton 2003). In the U.S., both the EPA and FDA regulate waste pharmaceuticals and other byproducts that result from medicine manufacture.

There is currently insufficient information to determine the relative quantities of medicines reaching the environment from each of the various sources. But one area of this complex issue that is amenable to immediate change is in the disposal of unwanted medicines by consumers. This resource toolkit discusses several ways to address the issue of unwanted and/or expired medicine disposal from households.

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[11] How Sewer and Septic Systems Work, by Marshall Brain, http://people.howstuffworks.com/sewer3.htm

[12] Swartz, C. et al. "Steroid Estrogens, Nonylphenol Ethoxylate Metabolites, and Other Wastewater Contaminants in Groundwater Affected by a Residential Septic System on Cape Cod, MA." Environmental Science and Technology. Volume 40, number 16, pp. 4894 -4902. Published online July 18 2006.

[13] Boxall, L.A. et al. 2004. "Veterinary Medicines in the Environment." Rev Environ Contam Toxicol. 180:1-91. See also Society of Environmental Toxicology and Chemistry (SETAC). Veterinary Medicines in the Environment. Crane, M.; Barrett, K.; Boxall, A.; Eds., SETAC Press: Pensacola, FL, 2007. (in preparation).

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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.

Table of Contents—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
Osco 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 naptha 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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www.lacrossecounty.org/hhm

Sheriff's Office
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 deputization.

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

Steven J. Helgeson
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.

Contacts:

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Volunteer promoter/Resident of Olmsted Falls
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http://www.olmstedfalls.org/meddisposal.htm

Mary Van Dalen
Corporate Communications Department
Southwest General Health Center
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Prescription Pill and Drug Disposal Program (P^2D^2), Pontiac, Illinois

Program Overview: The P^2D^2 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 P^2D^2 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 P^2D^2 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 P^2D^2 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 P^2D^2 program continually updates Illinois EPA to keep this map current.

This is a typical list of items accepted through the P^2D^2 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 P^2D^2 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 P^2D^2 collection and education programs, has collected and disposed of over 87,500 pounds of pharmaceuticals.

Long-term Actions: P^2D^2 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.oclandfills.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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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

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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 65th Street
• Mather's More Than a Café	33 East 83rd Street
• Chicago Police Dept. 5th District	727 East 11th Street
• Chicago Police Dept. 9th 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

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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

- 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		*Extra staff needed*
Travel			
Disposal Transportation	$1,124.26		*Includes U-Haul rental*
Supplies			
Postage/Printing	$556.65	$600.00	*Includes direct mailings, posters and postcards to pharmacies*
Contract Costs			
Advertising	$11,315.00		*Includes radio station fees*
Marketing/Educational	$5,586.93		*Educational brochure design and 10 months of public education and outreach*
Other Costs			
Disposal Fee	$2,940.00		*For the over 2,100 lbs of collected materials*
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?		*How have you been disposing of unwanted meds?*	
Newspaper	42%	Storing	40%
Television	35%	Flushed	26%
Radio	13%	Garbage	26%
Poster	10%	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 then 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 (P^2D^2), 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 P^2D^2 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.

Contacts: **Practice Greenhealth**
1901 North Moore Street, Suite 509
Arlington, VA 22209
Tel: 888-688-3332
info@practicegreenhealth.org

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 dialogues[1].

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

Contacts: Sierra Fletcher, Associate - Policy and Programs
Contact for Fluorescent Lamps/Medical Sharps/Pharmaceuticals
Telephone: (617) 236-4886
Email: sierra@productstewardship.us

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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RUM Project Manager
Phone: 1300 650 835 or 0417 600 419

Emma Cullen-Ward
Jackson Wells Morris
Phone: (02) 9904 4333 or 0414 989 137

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).

3. How to Hold a Successful Collection

A. Overview of considerations for conducting a medicine take-back program.

B. List of Potential Partners. This will get you started finding organizations and corporations that can help you with various aspects of running a collection event, from funding to publicity to consulting support.

C. Northeast Recycling Council's (NERC) Operating Unwanted Medication Collections - A Legal & Safe Approach. This advisory from NERC provides advice on all stages of organizing collection events.

D. Regulatory Guidance for Organizers of Household Pharmaceutical Collection Events from Wisconsin's Department of Natural Resources.

E. Reference lists of controlled substances.

- The first list (dated July 2005) was compiled by the Marshall County (IN) Solid Waste Management District for the purpose of identifying controlled substances dropped off at medicine collections. To obtain an updated list, contact: Marshall County SWMD, 1900 Walter Glaub Drive, Plymouth, IN 46563, Toll Free: (800) 935-8618, Fax: (574) 935-8612, E-mail: mike@co.marshall.in.us, Internet: http://www.recycleyourtrash.org
- The second list is a U.S. Department of Justice Drug Enforcement Administration (DEA) list of controlled substances (dated April 2008, downloaded in December 2009 from http://www.deadiversion.usdoj.gov/schedules/orangebook2008.pdf). The list is intended as a general reference and is not a comprehensive listing of all controlled substances.

F. U.S. National Unused and Expired Medicines Registry Reporting Forms. The 2004 Questionnaire for Returned Medications by Individual Donor© and Collection Event Return Form were created to help policy makers regarding pharmacy policy, patient education and safety, and prescribing options. If possible, use one of these forms at your collection event to gather information.

G. Reverse Distributors Directory (U.S. DEA 2006). This directory lists some companies that can accept unused/expired pharmaceuticals and hazardous wastes. Pharmacists may contact their local DEA Diversion Field Office for an updated list of those reverse distributors in their area. A map of field offices is available at http://www.deadiversion.usdoj.gov/offices_n_dirs/fielddiv/index.html.

Available on line:

Pharmaceutical Waste at Non-hospital Healthcare Facilities
This guide from Wisconsin's Department of Natural Resources is available at http://dnr.wi.gov/org/aw/wm/pharm/nonhousehold.htm. Nursing homes, community-based residential facilities, residential care apartment complexes, assisted living, adult family homes and hospice care providers should review this publication to see whether their discarded medications are considered to be household or non-household pharmaceutical waste.

A. Overview of considerations for conducting a medicine take-back program.

Issues to consider when planning a medicine take-back program include:[1]

Before the Event

- **Funding:** A funding source for take-back and disposal programs has to be identified. There is currently no nationally established funding source for residential pharmaceutical waste management. Check the list of potential partners that appears later in this section for ideas on where to obtain funding or in-kind support, but the first place to check is your state Household Hazardous Waste (HHW) Office. Some states are allocating some HHW funding for unwanted medicine collections.

- **Publicity:** A consumer awareness campaign is needed to communicate the proper procedures for returning unwanted medicines and to motivate people to participate in the program. See section 4 of this booklet for models and ideas for public information materials. This has become a national issue and most people want to do the right thing and are willing to participate. It is important that they know what they can and can't bring (needles or "sharps" are often listed as not accepted, but it is important to prepare for them anyway).

- **Convenience:** Collection programs need to be easy to use if they are to compete with the toilet or the trash. If possible, the program should be free to the public and should be provided during hours when people are likely to be able to come (before or after typical working hours or on weekends). The location should be easily accessible to participants. Many collection programs have been sited at pharmacies for these and other reasons; consult the case studies in Section 2 and the advisory in this section from the Northeast Recycling Council (NERC) for ideas on how to make a collection user-friendly.

During the Collection

- **Safety:** Contact with some pharmaceuticals can pose safety hazards to pharmacy workers or collection participants.[2] Some drugs are skin contact hazards; some have dusts that are inhalation hazards. Reactions among certain substances are possible. Liquids may be hard to control, and spills of certain medicines could require special clean-up procedures. Safety measures have to be taken to protect the health of the collection staff receiving and managing returned pharmaceuticals. Keep medications in their original packaging in order to prevent reactions in the collection bin.[3] See page 21 of the NERC advisory in this section on collection event procedures for tips on ensuring safety.

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[1] This list is partially based on a report by the San Francisco Environmental Department (2004), referenced in Gualtero, Sandra M. "Pollution Prevention Measures for Unwanted Pharmaceuticals." Industrial Ecology. December 2005.

[2] Charlotte Smith, telephone call June 17, 2004, referenced in Gualtero. Ibid.

[3] For similar reasons, individuals disposing of medicines in the trash at home should *not* be advised to try to render medications unusable by mixing with water or sawdust or flour. Some organizations recommend this practice in order to make the drugs less desirable to thieves or children, but it can have unpredictable consequences.

- **Record-keeping**: If possible, keep records of the medicines and other items you collect. These records are valuable to researchers who are currently collecting data on unused medicines to develop improved prescription and patient communication practices. The most common method is to report pounds collected. This is useful for comparing to other programs, but does not provide much information to identify strategies to minimize unwanted medicine. You may choose to use one of the Unused and Expired Medicines Registry reporting forms included in this section.

    - Version 1 is a survey for participants to fill out that allows them to record anonymous information about the medications they are dropping off as well as their disposal practices.
    - Version 2 is a simple chart for collection event staff to record the necessary information about the drugs being dropped off, including type of drug, dosage, and reason for return.

- **Participant Privacy:** Maintaining anonymity for participants is important. For pharmacies, compliance with the Health Insurance Portability and Accountability Act (HIPAA) is essential.

  One method to ensure privacy is to ask participants to black out their personal information with a pen or marker before handing over the drug containers. Alternative methods include asking participants to remove labels from their drug containers or to empty the medication into the waste container and take the prescription container back home. One problem with these alternative methods is that someone may retrieve the empty containers from the trash and bring them into pharmacies for illegitimate refills. See the NERC advisory in this section for a full discussion of the packaging issue.

- **Pharmaceutical-like Items:** In addition to medicines, participants may bring in vitamins and homeopathic remedies and personal care products. Some of these substances may be regulated as hazardous waste due to the presence of metals or solvents. While collecting these may increase waste volumes, they should not pose regulatory or environmental problems as long as they are managed along with residential pharmaceuticals.

- **Identification of Controlled Substances:** Controlled substances are not readily identifiable by consumers, as product labels on dispensed medications often do not indicate their regulatory status. To determine if a substance is controlled, the product ingredients need to be checked against the Drug Enforcement Administration (DEA) list of controlled substances (http://www.deadiversion.usdoj.gov/schedules/orangebook2008.pdf). These medications are listed in Title 21 of the U.S. Federal Register as a narcotic or non-narcotic drug. Examples of well-known controlled substances include Valium®, Oxycontin®, Percocet®, and codeine. Non-controlled medications are any prescription medication *not* listed in Title 21 of the Federal Register.[4]

[4] Rubinstein, Lynn. Operating Unwanted Medication Collections -A Legal & Safe Approach. Northeast Recycling Council, Inc. September 2006

Coordinators of a medicine collection program at the solid waste management district in Marshall County, Indiana, have created a list of controlled prescription medicines. This list is based on the DEA list of class 2-5 drugs and has been organized to facilitate identification of controlled medications at a collection site. The list is included in this section of the resource kit, however it should be noted that this list changes constantly. If controlled substances are going to be collected, it is essential to have pharmacists and pharmacy technicians present to ensure proper separation of controlled and non-controlled medications.

- **Supervision of Controlled Substances**: By federal law (the Controlled Substances Act), only the person to whom a controlled substance was originally prescribed may legally possess it. The only exception is for law enforcement officials, who are authorized to take controlled substances into their custody. Therefore, you will need to have a law enforcement official (such as a member of the local police department) present at your collection if you accept controlled substances, and that official will be required to supervise the controlled substances until their final destruction. More details on the requirements are in the NERC advisory in this section. It is usually not sufficient simply to instruct the public not to bring controlled substances: individuals may identify their medicines incorrectly and collections have to be prepared to deal with controlled substances. The potential for people to bring in other items, such as illegal drugs, is another reason to seek police involvement. The DEA realizes the complication its rule entails for those holding collection events and is considering amending the requirements to allow for other methods.[5]

  Contact your state DEA (http://www.usdoj.gov/dea/pubs/state_factsheets.html) as well to find out whether there are any additional requirements. You should not let this extra regulation deter you from holding a collection event – typically city police departments are willing to help with these types of programs because of concerns with theft and drug abuse.

- **Hazardous Waste Regulations:** Waste from households is generally exempt from hazardous waste regulations, but if other organizations, such as senior centers or homeless shelters, wish to dispose of medicines through your collection program, you may face restrictions on the disposal method you use as well as the transport and supervision of the waste from your collection. Additionally, some states *do* regulate hazardous waste from households if it is consolidated in a single location, as would be the case at a collection event. Most of the Great Lakes states do not specifically identify pharmaceuticals as hazardous waste, but they follow federal law in listing characteristics such as toxicity and corrosiveness that qualify a substance as hazardous waste. This is the case in the following states.

  - Illinois: http://www.ipcb.state.il.us/SLR/IPCBandIEPAEnvironmental Regulations-Title35.asp (scroll down to sections 720-729 on hazardous waste).

[5] Cathy Gallagher, D.E.A. Presentation to the National Association of State Controlled Substance Authorities. October, 2006.

- Indiana: http://www.ai.org/legislative/iac/title329.html provides the hazardous waste rules.
- Minnesota[6]: http://www.revisor.leg.state.mn.us/arule/7045/ See section 7045.0310 on special requirements for waste collected through household hazardous waste management programs.
- Ohio: hazardous waste management rules at http://www.epa.state.oh.us/dhwm/rules.htm
- Wisconsin: hazardous waste rules online at http://www.legis.state.wi.us/rsb/code/nr/nr600.html

Michigan specifically addresses pharmaceuticals in its hazardous waste rule and permits them to be treated as universal waste (which requires the same final treatment as hazardous waste but has less stringent regulations on custody and reporting): http://www.deq.state.mi.us/documents/deq-wmd-hwp-Part111Rules00.pdf. See section R299.9228 on universal wastes (search for 'pharmaceuticals.')

After Collection

- **Disposal Method:** At present, unwanted medicines that are collected through proper disposal channels are typically incinerated in regulated hazardous waste incinerators with controls to minimize emissions. Sewer disposal may be legal for certain pharmaceuticals (those not classified as hazardous waste), but both the California Department of Health Services and wastewater treatment plants recommend against sewer discharge of pharmaceuticals.[7] Industry professionals believe that a destructive treatment like incineration is necessary for environmental safety. Other types of destructive treatments are theoretically possible; however, no alternative, cost-effective destructive treatment method is currently available commercially.

  See the "Resource Directory for the Management of Pharmaceuticals" at the end of this section for names of hazardous waste haulers and others who may be able to work with your collected pharmaceutical waste. Some of the companies on this list will not be able to work with household collection events – they only collect from managed sources of medicines such as hospitals and pharmacies – but others can contract with you for disposal of the uncontrolled pharmaceuticals that law enforcement cannot take.

[6] Minnesota and Wisconsin list veterinary drugs as hazardous waste but do not do the same for human medicines.

[7] McGurk, Jack. Chief, Environmental Management Branch, California Department of Health Services, Medical Waste Management Program. "Sewer Disposal of Pharmaceutical Waste," Memorandum to Directors of Environmental Health, Medical Waste Program Managers, and the California Healthcare Association. September 5, 2003.

B. List of Potential Partners

The issue of proper disposal of medications is incredibly broad in scope. Therefore, there are multiple agencies and organizations from various sectors of society with which to consider collaborations. These include:

- American Association of Retired Persons (AARP) www.aarp.org
- American Hospital Association (AHA) www.aha.org
- American Medical Association (AMA) http://www.ama-assn.org
- American Nurses Associations www.nursingworld.org
- American Pharmaceutical Association (APhA) www.aphanet.org
- America Water Works Association (AWWA) http://www.awwa.org
- Centers for Medicare & Medicaid Services www.cms.hhs.gov/
- City/County Departments on Aging
- County Boards of Health
- County Fire Departments
- County Health Districts
- County Sanitation Districts
- County Sheriff's Offices
- County Solid Waste Management Districts (SWMDs)
- County Stormwater Pollution Prevention Programs
- Department of Health and Human Services www.hhs.gov
- Hospital Pharmacies
- Hospitals for a Healthy Environment http://www.h2e-online.org
- Local Pharmacies
- National Association of Boards of Pharmacy (NABP) http://www.nabp.net
- National Council on Patient Information and Education (NCPIE) http://www.talkaboutrx.org/index.jsp
- National Oceanographic and Atmospheric Administration and Sea Grant
    - www.noaa.gov and www.seagrant.noaa.gov
- National Office of Housing and Urban Development (HUD) www.hud.gov
- Northwest Product Stewardship Council www.productstewardship.net
    - Group of government organizations that works with businesses and nonprofit groups to integrate product stewardship principles into the policy and economic structures of the Pacific Northwest
- Pacific NW Pollution Prevention Resource Center (PPRC) www.pprc.org
    - Non-profit organization that is the Northwest's leading source of high quality, unbiased pollution prevention (P2) information
- Poison Control Centers
- Product Stewardship Institute http://www.productstewardship.us
    - 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

- Public and Private Universities
- Religious Groups
- State and Regional Hazardous Waste Management Programs
- State Boards of Pharmacy
- State Dental Associations
- State Departments of Environmental Protection (DEP)
- State Departments of Public Health
- State Departments of Public Works
- State Drug Enforcement Administrations (DEA)
  http://www.usdoj.gov/dea/pubs/state_factsheets.html
- State TRIAD agencies
    - TRIAD is a program of the National Sheriff's Association that teams up with local law enforcement agencies and senior citizen organizations to work toward reducing criminal victimization and unwarranted fear of crime affecting older adults.
- United States Environmental Protection Agency
- U.S. Food and Drug Administration http://www.fda.gov
- US Consumer Product Safety Commission (CPSC)
- VA Hospitals http://www.va.gov
- Veterinary Organizations
- Wastewater Treatment Plants
- Water Reclamation Districts

Operating Unwanted Medication Collections - A Legal & Safe Approach

With Funding from the U.S. Environmental Protection Agency

Written by Lynn Rubinstein
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This document addresses unwanted medications collected from individuals. These include over-the-counter, prescription, and veterinary medications. This document does *not* address issues associated with unwanted medications from doctor's offices, facilities, hospitals, nursing homes, hospice, or other organized medical delivery programs and services.

I Introduction

The Northeast Recycling Council, Inc. (NERC), a non-profit organization that focuses on issues related to solid waste, recycling, and the decreased toxicity of the solid waste stream, was awarded a grant by the U.S. Environmental Protection Agency (USEPA) to develop environmentally sound and legal strategies for collecting and destroying unwanted medications from consumers.

The need for such a project arose from the growing scientific evidence that over-the-counter and prescription medications are finding their way into water supplies. While excretion of medication and its metabolites is certainly the primary source of this contamination, disposing of unwanted medications down the drain, down the toilet, or in the trash has added to this problem.

This project sought to develop and test strategies to ensure that unwanted medications are collected and destroyed in an environmental sound and legal manner, and prevented from being stolen or used by unauthorized persons – also known as "diversion."

Throughout this document, we refer to the materials being collected as "medication." The word "drug" is avoided. In addition, every effort has been made to make clear that the medications are "destroyed" and not "recycled." During the course of this project it became apparent that a great deal of confusion and misapprehension quickly arose if the words "drug" or "recycling" entered into the discussion. Word choice in this new and evolving area is critical.

II Background

An increasing number of studies, including a national reconnaissance of streams conducted by the United States Geological Survey (USGS) during 1999 – 2000, which looked for pharmaceuticals, hormones, and other organic wastewater contaminants, have detected medications in water supplies. The USGS study found medications in 80 percent of the streams they sampled.[1] A recent study by the Canadian National Water Research Institute for Health and Environment identified nine different medications from water samples taken near 20 drinking water treatment plants.[2] There are also studies

[1] http://pubs.acs.org/cgi-bin/jtextd?esthag/36/6/html/es011055j.html
Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance

[2] "Prozac and painkillers found in tap water", Vancouver Sun, November 14, 2004.

that indicate a potential correlation between human medication and the phenomenon of male fish producing eggs.

> "Our impression is that they are males that are being feminized [because] of the nature of the chemicals that are in the water, and most of them are estrogenic [meaning they stimulate development of female sex characteristics]," [David O. Norris, a professor in the University of Colorado's Department of Integrative Physiology] said. "Some of [the estrogenic chemicals] are natural urinary estrogenic products from humans, and some of them are pharmaceuticals—birth control pills."[3]

The Solid Waste Solution

So, what can the solid waste community do? Unfortunately, the norm has been to recommend that unwanted medicines be flushed. Clearly, this is no longer a sound recommendation. Well-publicized best management practice recommendations and opportunities for collecting unwanted medications for safe disposal are needed.

NERC spent two years, with the assistance of an Advisory Committee, researching the legal considerations associated with the collection and disposal of unwanted medications and developed a strategy that is both effective and legal. As a result, it developed best management recommendations and held eight unwanted medication pilot collections.

This guidance document reflects the experience gained through the implementation of those pilot collections. The model outlined in this document satisfies all federal legal requirements, but individual state requirements must be addressed before holding a collection. If yours will be the first collection in the state, you are likely to have to be the one to confront and resolve these concerns. This document outlines the state-specific issues that are likely to arise and offers suggestions about how to address them.

Federal agencies that regulate the handling and disposal of prescription medications include the United States Drug Enforcement Administration (USDEA), USEPA, and the United States Department of Health & Human Services (USDHHS). In addition, state laws regulate prescription medications, and solid and hazardous waste. Because the management of unwanted medications is a new issue and one that has yet to fully evolve, the federal laws are not always compatible with each other, and state laws introduce additional complexities.

[3] "Male Fish Producing Eggs in Potomac River", *National Geographic News, November 3, 2004* http://news.nationalgeographic.com/news/2004/11/1103_041103_potomac_fish.html#main

The guidance in this document is organized as follows:

- What to expect at a collection
- The law
    - Federal
    - State
- Legal strategy for collecting unwanted medications
- Holding a collection
- Case studies

III What to Expect at a Collection

NERC conducted eight unwanted medication pilot collection events in advance of developing this guidance. Each of the pilots accepted prescription, over-the-counter, and veterinary medications. Among the prescription medications were controlled and non-controlled substances.

Under federal law, the USDEA determines what is a controlled substance. These medications are listed in Title 21 of the U.S. Federal Register as a narcotic or non-narcotic drug. Examples of well-known controlled substances include Valium®, Oxycontin®, Percocet®, and codeine. Non-controlled medications are any prescription medication *not* listed in Title 21 of the Federal Register.

It is the management of controlled substances that introduces the legal complexities into collecting unwanted medications. Yet, it is neither practical nor advisable to tell the public "do not bring controlled substances." Even with this hypothetical stricture, controlled substances will arrive and, thus, the collection must be prepared to handle this material.

Pilot Location	Number of Participants	Average Volume (Gallons) per Participant Non-Controlled Substance	Average Cost per Gallon Destruction of Non-Controlled Substance	Hazardous Waste Transportation Fee
Montague, MA*	6	0.8	$30	$350
S. Portland, ME*	51	0.7	$24	$250
Northampton, MA*	14	0.4	$20	$350
South Hadley, MA**	22	1.4	$13	$0
Wilbraham, MA**	18	1.4	$12	$0
Buckland, MA**	6	1.3	$14	$350
Rutland, VT*	28	1.1	$17	$225
Wolfeboro, NH**	27	0.7	$7	$0
AVERAGE	**21.5**	**0.97**	**$17**	**$191**

Stand-alone collection* With HHW event**

Figure 1: Overview of pilot collections

Amount collected: While several different types of collections were tested, the amount of materials collected at each event was surprisingly consistent. On average:

- Each person brought in approximately one gallon of non-controlled substances (in the original containers).
- Each person brought in one container of controlled substances.
- Approximately 4 percent of what was received was controlled substances. This figure ranged from a low of less than 1 percent to a high of 17 percent.

However, when the collections that were held in conjunction with HHW events were analyzed separately, the average amount of material brought in by each person was significantly higher: almost 1.25 gallons per person of non-controlled substances, as compared to 0.70 gallons per person from the events that were not associated with HHW collections. And, approximately 22 percent of the number of HHW collection event participants brought unwanted medications.

Participation: Turnout was relatively low for all events, with less than one percent of the population base participating despite heavy advertising in half of the programs.

Why? The theory is the unfamiliarity with the topic. As with the early days of household hazardous waste (HHW) programs, the public needs to be educated to save its medications and there needs to be programs to accept them. The common practice in the medical and health communities of advising consumers to put medications down the drain may contribute to the lack of public awareness. As this topic becomes more mainstream, and more collection events are available, it is reasonable to expect that volumes and participation will increase dramatically.

IV The Law

Federal Law

At the heart of legally managing and collecting unwanted medications is the necessity to comply with the USDEA laws and regulations. These specifically target controlled substances; e.g., Valium®, Oxycontin®, Percocet®, codeine. **The USDEA prohibits the transfer of dispensed controlled substances from an individual to a doctor, pharmacist, reverse distributor,[4] or any other entity registered with the USDEA to handle or manage controlled substances.** The only exception is in the case of a recall or a dispensing error. Translated, this means that once a prescription has been filled, only the person to whom it was prescribed may legally be in possession of it. **Handing it back to a pharmacist or the doctor is illegal because federal law prohibits their having possession. The sole exception is that controlled substances may pass into the control and custody of law enforcement officials** because they are specifically authorized by USDEA laws and regulations to receive and possess controlled substances.

At this time, the USDEA has made it clear that reverse distributors may not accept dispensed controlled substances as part of the waste stream. There appears to be no federal constraint on reverse distributors accepting non-controlled substances, but state law may impose such limitations.

Thus, in order to legally collect unwanted controlled substances it is *an absolute necessity* that law enforcement officials be on-site, participate in the collection, take physical control and custody of all controlled substances, and be responsible for their destruction as required by state and federal law.

We recommend that during the planning stages for a collection event, that you contact the local or regional USDEA agent-in-charge and inform them in detail about the planned collection and the safeguards that will be taken to ensure that there will be compliance with federal controlled substance laws.

The reality is that it is a practical impossibility to prevent controlled substances from coming into a collection. The program *must* be designed and prepared to legally and safely handle these medications, and to destroy them.

[4] A reverse distributor is a business that is authorized by the USDEA to collect medicines from pharmacies and other entities registered with the USDEA to be in possession of controlled substances. The medicines are then either destroyed or returned to the manufacturer for credit.

Federal Hazardous Waste Law
The U.S. Resource Conservation and Recovery Act regulates the transportation, treatment, and disposal of hazardous waste, but exempts waste generated by consumers (household waste) from regulation. Some prescribed and over-the-counter medications are known to require management as a hazardous waste when they come from an entity other than an individual. For example, nitroglycerin, NicoDerm® patches, epinephrine, Coumadin®, Leukeran®, lindane, and Alkeran® are listed hazardous wastes. And, many medications are hazardous waste due to their characteristics: ignitable due to the alcohol content – including rubbing alcohol, or toxic due to heavy metals such as mercury.

The U.S. Department of Transportation (USDOT) also regulates the transport of hazardous waste.

If you have a HHW program because you are concerned about hazardous waste entering the solid waste stream, then preventing medications from entering the solid waste stream makes sense for the same reasons.

> As part of the NERC project, a list of the medications collected was examined by PharmEcology Associates, LLC to determine which materials collected should be considered a hazardous waste. This study estimated that approximately 10 percent of the over-the-counter and prescription medications that were collected, by type not by volume, should be considered hazardous waste.

State Hazardous Waste Law
Like federal law, most state hazardous waste laws do not regulate individuals. Thus, materials that have hazardous waste characteristics may, by law, be disposed of in the trash. However, some states do regulate household waste if is consolidated in a central location, as would be the case in a collection event, and this must be taken into consideration if it is the case in your state. In addition, some states require that a permit or notification be in place for a collection event. Be sure to confer with the state environmental agency about requirements for holding an event that will include the participation of a hazardous waste hauler.

Other State Legal Requirements
A myriad of state laws and regulations have the potential to affect whether and how to hold unwanted medication collections. In addition to hazardous waste laws, state specific requirements may include:

- Board of Pharmacy regulations and laws
- Controlled substance laws and agencies
- Public safety laws about law enforcement being in possession of non-criminal evidence
- Privacy laws

It is essential that these be addressed in advance of holding a collection.

Board of Pharmacy

Each state Board of Pharmacy regulates the licensing of pharmacists, and the handling and dispensing of prescription medications. Because it is extremely important that a pharmacist participate in the collection, as will be explained in detail below, the Board of Pharmacy must have approved the activity. This approval, once obtained, should apply to all subsequent events, but this will require that a responsible party has interacted with the Board of Pharmacy, explained the program, and secured its express permission for the way in which the collection(s) will take place. We know from experience that the protocol for holding a collection described in this guidance document is acceptable to the Boards of Pharmacy with whom we have interacted.

Of primary concern to Boards of Pharmacy is the handling and disposal of controlled substances. As stated above, federal law (and all state laws echo this) prohibits dispensed controlled substances from being in the possession of anyone other than the person to whom they were dispensed. The sole exception to this is law enforcement. This means that a pharmacist *may never* be in physical possession of a controlled substance that has been dispensed, with the two limited exceptions described above that are irrelevant to these circumstances. The question becomes, *is the pharmacist's involvement in the collection event "possession?"*

As explained below, the primary role of the pharmacist in a collection is to determine whether a medication is a controlled substance. If identified as a controlled substance, the pharmacist conducts a physical inventory of the contents, replaces the materials into the original container, and hands it over to law enforcement. Some states may construe this as possession. To authorize such an activity, it will be necessary to persuade the Board of Pharmacy that adequate precautions will be in place to prevent diversion. Without this authorization, participating pharmacists are at risk of losing their licenses.

In order to secure this authorization, during the NERC project we developed an information packet for Boards of Pharmacy that describes how an unwanted medication collection event would be held in their state, including the safeguards against diversion. The Boards of Pharmacy were contacted individually, the information provided in advance, time on the Board's agenda secured, and a presentation made to the Board of Pharmacy with the request that it vote to authorize the holding of such events as described in the documentation provided. A sample of the information provided to a Board of Pharmacy is attached in Appendix 4.

In 2006, the National Association of Boards of Pharmacy (NABP) adopted a resolution that states

> ***Whereas,*** patients often need guidance on the proper disposal of unwanted, unused, or expired medication; and
>
> ***Whereas,*** the inappropriate disposal of unused or expired medication may pose a significant risk to the public and the environment; and

Whereas, there is an increased incidence of theft of prescription medications from homes and residential trash, resulting in the diversion and abuse of such medications; and

Whereas, patients with excess or unused medication often share their medication with other individuals in the absence of any pharmacist or medical supervision;

Therefore Be It Resolved that NABP and the boards of pharmacy work with the pharmacy community, environmental community, and regulatory agencies to develop programs whereby patients can safely and properly dispose of unwanted, unused, or expired medications; and

Therefore Be It Further Resolved that NABP develop guidance for the boards of pharmacy and the pharmacy community addressing the environmentally safe and legal collection and destruction of unwanted, unused, or expired medications from patients.[5]

As a result, we can be hopeful that Boards of Pharmacy will become allies in the effort to collect unwanted medications. That has been the experience during the NERC project.

Controlled substance laws and agencies

Many states have agencies specifically charged with the oversight of the movement and handling of controlled substances.[6] Like the Board of Pharmacy, their primary concern will be the risk of diversion by the on-site pharmacist, other collection staff, or the general public. Designing a collection program that has safeguards built in specifically to prevent this will be essential in securing their permission. Advance permission from such agencies must be secured. Providing information such as is provided to the Board of Pharmacy and having individual conversations with these agencies to ensure that the collection program design satisfies the state requirements is essential.

In addition, a few states have a more extensive list of what constitutes a controlled substance than does the USDEA. Handling of state-specific controlled substance designations must be included in the program planning and implementation.

Public safety laws

Some states have laws that prohibit law enforcement from being in possession of non-criminal evidence. As is explained in detail below, at the very heart of ensuring that controlled substances will not be diverted is the physical and active involvement of law enforcement. Law enforcement takes possession of the controlled substances and is responsible for their destruction per USDEA and state requirements. This means, being in possession of non-criminal evidence.

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[5] Resolution No. 102-2-06, Title: Safe and Environmentally Friendly Medication Destruction Programs, http://www.nabp.net/ftpfiles/AM/102ndProceedings.pdf

[6] The National Association of State Controlled Substances Authorities (NASCSA) maintains a list of these agencies on its website. http://www.nascsa.org/Folder5/memstates.htm

The reality is that law enforcement agencies do, from time to time, come into possession of non-criminal evidence, such as narcotics found at the scene of a suicide or simply ”found.” Thus, it will be at the discretion of law enforcement whether to participate in the event and whether to take physical, permanent responsibility for the controlled substances. Although no state requires law enforcement to take non-criminal controlled substances into their possession, their doing so is a pre-requisite to a legal and safe collection program. Therefore it is imperative to secure their voluntary participation.

Privacy laws

While the federal privacy law, the USDHHS Health Insurance Portability and Accountability Act of 1996 (HIPAA), generally does not apply in the case of unwanted medication collections, state laws may be more stringent. If this is the case, ensure that all personal information is marked off of prescription containers before being handed to either the pharmacist or law enforcement official, while being sure that the medication information remains legible.

This raises the issue whether to remove the medications from their labeled containers. The medications should ALWAYS remain in their containers so that the identity of the medication can be established at all phases of the process. In the case of diversion or accidental poisoning, it is essential to know what medication was involved. Proper labeling is also essential to determine if the item is a controlled substance.

V A Legal Strategy for Collecting Unwanted Medications

While there are many steps for holding a successful legal and safe collection event, essential to the program are:

- Law enforcement participation, including taking possession of controlled substances, and assuming responsibility for their destruction.
- Segregation of controlled substances from non-controlled substances.
- Appropriate destruction of all medications.

Controlled substances are segregated from non-controlled substances

In order to ensure that controlled substances are secure from the risk of diversion and are handled as required by USDEA and state law, all controlled substances pass from the consumer to the custody of law enforcement. The collection strategy presented in this guidance document relies upon the expertise of a pharmacist to determine which medications are regulated as controlled substances and to direct law enforcement to take custody of these materials. While it is illegal for pharmacists to take possession of dispensed medications, with the permission of the state Board of Pharmacy, they may provide advice about the character of the collected medications.

As mentioned above, the controlled substances are destroyed as required by the USDEA, through the programs and systems in place with the custodial law enforcement agency.

All non-controlled medications are destroyed as hazardous waste

Throughout the research, development, and implementation of the pilot collections, an Advisory Committee guided the process and decision-making. The Advisory Committee included representatives from around the country with a myriad of backgrounds and expertise. These included the USDEA, an experienced and licensed hazardous waste hauler, reverse distributors, state environmental agencies, local recycling and hazardous waste officials, pharmacy representatives, pharmacists, and expert consultants in medication management and disposal. This Committee thought very carefully about the issue of *how* best to dispose of unwanted medications. The conclusion was a carefully crafted recommendation for hazardous waste disposal as the mechanism of choice, with caveats for alternative disposal methodologies. The complete text of that best management practice recommendation is in Appendix 5.

When deciding how best to dispose of collected unwanted non-controlled medications, several factors should influence the decision making process. Naturally, cost will be one factor. But when making a decision about which strategy to use, be sure to evaluate whether hazardous waste destruction is truly too expensive given the extra security requirements that would be necessary to transport medications by common carrier or law enforcement to a solid waste disposal facility, such as an incinerator or landfill. Also be sure to determine that the solid waste facility is permitted to handle medications, and if so, under what conditions.

It is also important to be able to track the medications from the point of collection through disposal. Due to the increased value and attractiveness of diverting medications to other users and uses, there is a growing concern about theft. As a collected material, it may appear to be a particularly attractive waste to scavenge. Precautions should be taken. Under all circumstances, state and federal drug management and disposal regulations, as well as solid waste management and disposal laws and permits must be observed.

Among the reasons for the determination to destroy non-controlled substances as hazardous waste were:

1. Cradle to grave tracking of the movement and destruction of the medications.
2. Decreased access to medications, thus preventing diversion and inappropriate use of medications, as well as minimizing the risk of poisoning children and pets.
3. The presence of medications with hazardous waste characteristics in the waste mix and the practical impossibility of separating them out.
4. Physical destruction of the medications for the purpose of rendering them unrecoverable, as required by federal law, is considered to be essentially a practical impossibility, with the exception of incineration.[7]
5. Sending a message about the importance of safe end-of-life management of medications.
6. Avoiding water pollution from medications in landfills and the risk of diversion when tipped out at disposal facilities.

[7] Conversation with Vicky Seeger, USDEA, October 2004

VI Holding a Collection Event

Brief Overview

What happens at a collection event?

1. Individuals come in with their medications – ideally in the original containers. Experience says that individuals bring in a lot of material. On average each person will bring in approximately one gallon of medications (in their original containers). They bring it in cardboard boxes and in plastic grocery bags.

2. They drop off their medications and leave. An individual's on-site time is very brief. You may have a few survey questions for them before they leave.

3. The pharmacist sorts and categorizes the medications as controlled and non-controlled items. The non-controlled medications are put in hazardous waste containers. The controlled substances are inventoried and given to law enforcement.

4. At the end of the event, the controlled substance inventory is printed out and signed by the law enforcement official as well as the pharmacist.

5. At the end of the event, the hazardous waste hauler removes all of the non-controlled substances, creates manifests to document the materials per USEPA and USDOT regulations, and transports it to a hazardous waste incinerator.

6. After the hazardous waste hauler has left, the law enforcement official takes the controlled substances to the station and puts them in the evidence storage locker, awaiting destruction.

A Collection Event in Detail

The overriding goals of any unwanted medication collection must be to:

1. Be in full compliance with federal and state laws.
2. Avoid illegal diversion of the medications.
3. Ensure the safe and environmentally sound disposal of the medications.

Each of the following, and more, will be detailed below, but here is a brief overview of what is required for a legal and safe collection event:

1. Law enforcement presence (in uniform, previously agreed to take physical possession of controlled substances, and be responsible for witnessed destruction).
2. Pharmacist to determine if the medications collected are controlled substances and to conduct an inventory.
3. Properly licensed hazardous waste hauler.
4. An indoor site with electricity.

Any unwanted medication collection will be limited to a few hours on a specific day. This is due to the requirement of the active involvement of law enforcement and the practical limitations that this imposes.

Staff

No matter the venue, there are certain staff requirements essential to the safe and legal conduct of an unwanted medication collection event.

1. Law enforcement (on- and off-site)
2. Pharmacist
3. Greeter
4. Data entry
5. Supervisor
6. Hazardous waste company

Depending on the anticipated size of the event, it may be necessary to have multiples of law enforcement, pharmacists, greeter, and data entry staffing. Following is a description of the staff-specific responsibilities.

Law Enforcement

Responsibilities:

1. The primary responsibilities of the law enforcement official are to:

- Provide security
- Take possession of the controlled substances
- Transport the controlled substances to the agency's evidence storage locker, and take whatever steps are necessary to store the medications in that locker.

- The law enforcement official must be in uniform.

2. During the collection:

- The pharmacist will determine if a medication is a controlled substance. If it is a controlled substance, the law enforcement official will be alerted. (S)he should watch the physical inventory that will be conducted by the pharmacist and the return of the medications to the original container.
- After the inventory is completed, the controlled substance will be handed to the law enforcement official. A container for collecting the controlled substances will be provided, for example a five-gallon pail.
- Once the inventory is completed, the controlled substances must stay in the sole physical possession of law enforcement throughout the collection and until placed in the evidence storage locker or taken for destruction. At no time may the container of medications leave the physical possession of law enforcement.

- At the end of the event, an inventory of controlled substances will be printed out. The pharmacist will sign as a witness that the inventory accurately represents what went into the custody of law enforcement. The law enforcement official will sign as well, verifying that (s)he received these materials. An original of the signed and witnessed inventory will be provided to accompany the controlled substances back to the evidence storage locker. Depending on the preference of the law enforcement agency, the inventory may be physically attached to the container of controlled substances, placed inside it, or carried separately.
- Depending on the type of container, the law enforcement agency chooses for transporting to and storing the controlled substances in the evidence storage locker, the law enforcement official may also be required to initial over a seal securing the container of medications.
- For security sake, law enforcement should stay on site until the container(s) of non-controlled substances are closed, labeled, and placed in the hazardous waste hauler's truck; effectively removing them from the site and public access.

It is essential that the law enforcement official be in a position to have visual contact with the individuals dropping off the medications and the point of drop-off. For example, if the collection is in conjunction with a HHW day and medications are being taken from people's cars and walked to the indoor site where the sorting and data collection is taking place, it will be necessary to have law enforcement shadowing or watching this activity and movement in order to ensure that no diversion takes place.

3. Off-site, after the collection:
- Maintain secured locked possession of controlled substances along with USDEA required inventory.
- Arrange for and ensure USDEA authorized witnessed destruction of controlled substances.

Timing: Law enforcement should be on-site at least one-half hour before the event begins and should remain on-site until the hazardous waste hauler has completed all of its paperwork, closed the containers, and put the containers on the hazardous waste truck. At that time, the law enforcement official should return to their office, complete whatever paperwork is necessary, and secure the controlled substances in the evidence storage locker or take it directly for witnessed destruction.

Pharmacist

Responsibilities:

The pharmacist must be licensed and in good standing in the state.

1. The pharmacist's primary responsibilities during the collection are to:
   - Determine if a medication is a controlled substance.
   - Make every reasonable effort to identify unknown or non-labeled medications. This will include using reference materials and may include calling poison control or other reference sources.

If it is not possible to identify the medication, the USDEA has indicated that it should be handled as a controlled substance.

- If it is a controlled substance, alert the law enforcement official as well as the person entering the inventory into the computer.
- Conduct a physical inventory of the controlled substance. Provide the medication name, dosage, and amount of material to the data entry person. The information will be entered into the computer by the data entry person.
- Put medications back in the original container and hand the controlled substances to the law enforcement official.
- Put non-controlled substances in the hazardous waste container.

2. At the end of the event, an inventory of controlled substances will be printed out in triplicate. The pharmacist will sign as a witness that the inventory accurately represents what went into the custody of law enforcement. The law enforcement official will sign as well, verifying that (s)he received these materials. An original of the signed and witnessed inventory will be provided to the pharmacist for his/her records, and one copy should stay with the event organizer.
3. It is recommended that (s)he should wear a pharmacist jacket in order to make it visually obvious that it is a pharmacist.
4. Gloves must be worn at all times when handling/counting medications.
5. The pharmacist should provide tools for counting medications.
6. The pharmacist should provide reference materials for identifying unknown/non-labeled tablets.
7. Answer questions from the public.
8. Optional: Physically inventory all medications brought into the event, such as is done for the controlled substances.

Timing: The pharmacist should be on-site at least one-half hour before the event. The pharmacist should assume that (s)he will have to be on-site for at least one hour after

the event closes. There may be remaining inventory work to be done, the controlled substance inventory must be completed and signed, and supplies packed.

Greeter

Responsibilities:

1. Direct people to the collection and answer questions.
2. Ask if bringing any needles. If say yes, explain that the only needles that can be accepted are EpiPens. Other needles need to be removed.
3. Provide pens for obscuring personal information, as desired.
4. Optional: Conduct survey.
5. Optional: Distribute informational materials.
6. Optional: Take the medications from cars and transport them to the sorting table, if the police permit such a practice.
7. Optional: Help remove cardboard packaging for recycling.

Timing: Greeters should be on-site at least one-half hour before the event begins. The greeter is likely to be able to leave very shortly after the scheduled end of the event.

Data Entry

Responsibilities:

1. Enter inventory of medications into computer.
   - Should back-up data entry every few minutes on memory stick or other external memory device.
   - Print out inventory of controlled substances for witnessing.
2. Optional: Help remove cardboard packaging for recycling.
3. Optional: Put non-controlled substances in hazardous waste container.

Timing: The data entry person should arrive at least one hour before the event starts in order to set up the laptop and ensure that the printer is operational. This person will have to remain on-site until all of the medications have been segregated into controlled and non-controlled and the controlled medications inventory has been complete. Depending on the size of the event and whether non-controlled substances are being inventoried, this may take at least one hour beyond the time the event closes to the public.

Site Supervisor

Responsibilities:

On-site:

1. Provide all supplies and equipment.
2. Set up site.
3. Instruct each staff person about responsibilities and procedures.
4. Ensure that all operations are running smoothly and that personal protective equipment is being used.
5. Ensure that law enforcement does not leave site until all non-controlled medications have been packed and placed on the hazardous waste truck.
6. Maintain records, including copy of witnessed controlled substance inventory.
7. Answer operational questions as they arise.

Off-site:

1. Recycling and trash.
2. Data analysis and reporting.
3. Paying invoices.
4. Thank you notes.
5. Follow-up with hazardous waste company to ensure destruction.

Timing: The site supervisor should arrive at least one hour before the start of the event. The site supervisor will have to remain on-site until all of the medications have been segregated into controlled and non-controlled, the controlled medications inventory completed and signed, the controlled substances packaged for transportation by law enforcement, the hazardous waste company has come and gone, and the site is entirely cleaned-up and put back together. Depending on the size of the event, this will take approximately two hours after the event closes.

Hazardous Waste Company

Responsibilities:

1. Provide drums/containers for collection of non-controlled substances.
2. Seal containers, prepare paperwork, and transport non-controlled substances for hazardous waste destruction.
3. Remove medications *on the same day as the event*.
4. Provide tracking paperwork from point of collection through destruction.
5. Incinerate non-controlled substances in licensed hazardous waste incinerator.
6. Provide certificate of destruction.
7. Optional: Provide weight of materials collected.

Timing: The hazardous waste company needs to drop-off containers at least one day before the event. The hazardous waste company should be scheduled to return for pick-up of the non-controlled medications and unused containers one hour after the

scheduled close of the event. Generally, it will take one-half hour to complete all of the necessary paperwork, to close the containers, and place them on the truck.

Medications should never be stored on-site after the event. It creates too great of a risk of theft.

If the event is held in conjunction with a HHW event, containers for the unwanted medication collection will be dropped off along with the drums for the HHW. As soon as all of the non-controlled medications are in the hazardous waste containers, they must be closed, labeled, and put on the hazardous waste truck, even if the rest of the HHW collection event is not over. The hazardous waste company needs to be alerted to this requirement in advance of the collection. This is essential to prevent diversion of the medications, and to limit the amount of time that law enforcement must be present for the medication collection; allowing them to return more promptly to the station to properly store the controlled substances.

Site Safety

A great deal of time and effort goes into determining the best on-site staffing, traffic flow, security, and equipment. The goals are public safety, ensuring that medications are not diverted, and that safe and legal disposal occurs. The presence of law enforcement, the hazardous waste company, and configuring the site to minimize the risk of diversion are essential to achieve these goals.

Simple safety precautions include a site set-up that positions law enforcement in such a way that no one can surprise them from behind. And, never store collected medications at a HHW facility or any other setting, other than in the custody of law enforcement. The risk of theft or accident is too great, and the dangers of such a result far outweigh any inconvenience or expense of ensuring that all medications are removed from the site on the day of the collection.

Personal Protective Equipment and Practices

It is very important that everyone working at the event (law enforcement, pharmacist, greeter, site supervisor, and anyone accepting medications from individuals) who may contact the containers of medications wear gloves (latex or non-latex) at all times when handling this material. The containers are powdery, sticky, and dirty. It is important to remember that these are medicines. Accidental ingestion (even through skin or breathing) should be avoided. Wearing facemasks should be considered, especially for the pharmacist who is doing the physical inventory of the medications.

Drinking or eating directly in the area that the medications are being collected and handled should be avoided – and be sure to take off the gloves before handling any food or beverages. Used gloves should be discarded in the hazardous waste container and replaced with new gloves after any breaks.

Greeters, or anyone, who is working with vehicles or lines of traffic must wear safety vests.

Packing Medications for Disposal

As has been discussed, controlled and non-controlled medications are packed separately. In both instances the medications are packed in their original containers. As discussed above, we strongly urge that the disposal mechanism be hazardous waste incineration for all non-controlled substances.

The project Advisory Committee carefully considered the question whether unwanted medications needed to be shipped in their original containers for disposal. Clearly, this adds to the cost since most disposal pricing is based on volume or weight. Especially in instances where pricing is based on volume, shipping medications in their original containers results in a great deal of "air" being paid for because few of the medications fill the original containers; in some instances only a few pills will remain. The *Committee came to the clear conclusion that it was important for the medications to be shipped in their original containers.* The complete recommendation is in Appendix 6.

<u>Packing of non-controlled substances</u>

There should be no loose pills in the hazardous waste container. Non-controlled substances, in their original containers, are placed in a hazardous waste drum or container for destruction. Sometimes pills will be brought in outside of the original container, for example a mix of pills in a plastic bag or several types of pills in one container. It is important that the pharmacist make a best faith effort to identify the medication. This will include using reference materials. Once identified, put the medication in a Ziploc® bag and mark the bag with an indelible marker indicating the type of medication and dosage. If the tablets remain unidentifiable, mark the bag "unknown."

It is possible to save space by removing unnecessary packaging, specifically pressboard outer-packaging. This is commonly found around blister packaging and around unopened bottles of over-the-counter medications. Because blister packaging keeps the pills separated, it is considered original packaging.

Figure 2: Outer-packaging removed for recycling, right.

Figure 3: Blister packaging, right.

Shipping the medications in the smallest hazardous waste container that is available will help control costs.

While the majority of non-controlled substances will go in one container, two types must be separated: items under pressure and certain mercury-containing medications.

Figure 4: Hazardous waste container with medications, left.

Items under pressure: Items under pressure are, most typically, inhalers. Use a five-gallon pail because it is very unlikely that you will receive more than this and smaller containers are generally not available. Remove the plastic housing from the inhalers in order to ship less material to the hazardous waste company. If pricing is by weight or volume this can help control costs.

Figure 5: Items under pressure, right

Mercury-containing medications: Mercury-based antiseptics, such as Mercurochrome, need to be packed separately. Mercury-containing preservatives, a more common manifestation of mercury in medications, such as Thimerosal, do not require separate handling and can be packed with the rest of the non-controlled substances.

During the pilot collections people often brought medicines that were decades old. So, mercury-based medicines may be brought to your collection.

Figure 6: Elemental mercury, left.

Although advertising for programs should specifically state not to bring thermometers, one or two will probably come in. They can be shipped with the mercury-containing medications, but preferably, the thermometers will be diverted to a mercury-recycling program. Consider offering a digital thermometer exchange. In which case, having containers for recycling of mercury thermometers must be on hand and arrangements made for the recycling. It may be that a company other than the hazardous waste hauler will provide this service. Like sharps, many companies provide mercury recycling services via mail or other common carrier service.

Sharps: While sharps should be expressly excluded from the collection, inevitably they come in. Be prepared by having sharps containers that can be mailed back to a sharps management company after the event. There is one exception to this: EpiPens. While there is a sharp within the EpiPen, it is entirely sealed in a rigid plastic container and can be placed intact into the hazardous waste drum.

Figure 7: EpiPens for hazardous waste disposal.

Have the greeters ask people if they have brought needles, before accepting their medications. This is simple strategy to prevent the sharps from coming into the collection.

Items for the trash or recycling: Inevitably, someone will bring materials that you might decide to put in the trash. For example, sun block, lipstick, deodorant, or skin cream, frequently arrive in mixed bags or boxes of materials cleaned out of a bathroom cabinet. You will also throw out the rigid plastic housing from around inhalers.

Possible recyclables that will be generated include the cardboard over-packing mentioned above, plastic grocery bags, and cardboard boxes. Otherwise, this will be part of the solid waste stream. Experience indicates that these combined materials generate approximately five gallons for every 30 participants.

Packing of Controlled Substances

The controlled substances remain in their original containers. Indirectly, federal law requires this because of inventory control at the point of destruction. Depending on the volume of material received and the preferences of the law enforcement agency taking possession, the packing of the medications may vary. In several of the pilot events, the preference was for Ziploc® bags.

Figure 8: Packed controlled substances.

There are no set rules for how the controlled substances should be packed or transported to the evidence storage locker. This is at the discretion of the law enforcement agency. What is mandatory is that the signed inventory accompanies the medications and that it stays with them in the evidence storage locker and through the point of destruction. When the medications are destroyed, the contents are checked against the inventory to ensure that there has been no diversion. This is USDEA law.

If the Ziploc® bag approach is chosen, the medications are put inside a transparent one-gallon Ziploc® bag, the kind with the external slider. Depending on the preference

of the agency, the signed and witnessed inventory may be placed inside the bag, visible to the outside. The bag is closed and then packing tape is used to seal over the closure. The law enforcement official then uses an indelible pen to sign and date over the seal.

In other instances the use of a closed five-gallon pail was preferred, and in one case, a paper bag.

Pre-Event

The event organizer has a number of responsibilities in advance of the collection.

1. Ensure that all relevant state agencies have agreed to the procedures to be used
2. Budget
3. Site selection
4. Agreement of law enforcement to participate
5. Arrange for pharmacist
6. Hazardous waste hauler/disposal arrangements
7. Determine traffic flow and site set-up
8. Determine what will be collected
9. Arrangements for handling sharps
10. Arrangements for handling thermometers
11. Arrange on-site staff/volunteers
12. Secure equipment and supplies
13. Advertise/press release

State Agency Authorization

As discussed above, it is essential to ensure that all relevant state agencies and programs have authorized the collection and its procedures. It is possible that only the first collection event in the state will have to go through these steps. Be sure before proceeding that this has happened.

We also recommend that you contact the local or regional USDEA agent-in-charge and inform them in detail about the planned collection and the safeguards that will be taken to ensure that there will be compliance with federal controlled substance laws

Budget

While the final cost of this new program is hard to predict, examples can be found in the Case Studies, section VIII below, and in the discussion of Costs on page 31. We strongly recommend that this service be provided at no cost to the public. Particularly with the high cost of purchasing medications, being charged a disposal fee is likely to be an overwhelming disincentive.

Site Selection

Where the collection is held has only one pre-requisite: indoor with electricity. Other concerns will be local in nature - what type of event or entity to partner with, if any, traffic concerns, etc. If the collection will take place in a pharmacy, ensure that the

state drug control agency has approved the site configuration. There may be state laws that prohibit certain activities within or near where prescriptions are filled and dispensed.

Indoors is essential because of the nature of the material being collected, because of the use of a laptop and printer, and because an inventory needs to be done of at least some of the medications. If conducting the event at a public works garage or similar location, the inside of a garage bay will be adequate, as long as tables are provided and electricity is available.

Agreement of Law Enforcement

An absolute pre-requisite to holding a collection is the agreement of law enforcement to participate and provide all of the essential services, including taking physical possession of the controlled substances and being responsible for its destruction. Without this, the collection cannot take place.

The request for assistance should be in writing, and there should also be a follow-up memo sent to confirm the collection specifics and duties of the officer. See Appendices 7 and 8.

Arrange for Pharmacist

Arranging for the services of one or more pharmacists (depending on the anticipated size of the event and amount of data collection to be conducted) is a pre-requisite to the collection. Potential sources of pharmacists are:

- Retail pharmacies.
- Boards of Pharmacy.
- Colleges of Pharmacy.
- Hospitals.

Be sure that the pharmacist(s) are licensed and in good standing with the state Board of Pharmacy. If students from a College of Pharmacy will participate, ensure that a licensed pharmacist in good standing will be on site and will act as the pharmacist supervisor. Clarify payment arrangements at the beginning of the discussion. For many of the pilot collections, the services of the pharmacist were donated but employers paid the pharmacists. For example, regional hospitals provided the services of the pharmacists as a community service.

Hazardous Waste Hauler/Disposal Arrangements

Advance arrangements with the hazardous waste hauler include:

1. Agreement on fee schedule.
2. Agreement that all materials will be sent for hazardous waste incineration.
3. Guidance on packing of materials (e.g., can mercury-containing medications go into the same container as the other medications?)
4. Decision whether to ship under hazardous waste manifest.
5. Proof of insurance.
6. Size and number of containers to be provided.
7. When and where to deliver the containers.

8. Who will pay for their services.
9. Sign a contract.
10. Determine if an EPA ID number is required, and if yes, who will obtain it.
11. Schedule pick-up for no later than one hour after the close of the event, or if the medication collection is part of a HHW event that will finish after the unwanted medication collection, be sure that the hauler understands that it will need to close, label, and store the medication containers before the end of the rest of the event.

Medications should *never* be stored on site, or even off-site. This presents an extremely unsafe situation with a grave potential for diversion. If the collection is held in conjunction with a HHW event, then the medications will be transported for destruction along with the materials from the HHW event.

12. Arrange for certificate(s) of destruction.
13. Arrange for weights of containers to be provided, if desired.
14. Contact phone numbers for day of event.
15. Provide directions to container drop-off and collection site(s).

It is the responsibility of the event organizer to make these arrangements and ensure that all terms are satisfactorily fulfilled.

Determine Traffic Flow and Site Set-Up

Traffic flow and site set-up refers to vehicular as well as pedestrian traffic, and the configuration of essential staffing and equipment.

Vehicular: If the event is held in conjunction with a HHW event, this will be particularly important. Traffic flow has several requirements:

- Safety.
- Does not impede or interfere with HHW event.
- Law enforcement can see the transfer of medications from vehicles to greeter.

In a situation where the collection is not being held in conjunction with a HHW event, traffic flow issues are primarily those related to parking.

In pilot collections held in conjunction with HHW events, three traffic flow configurations were tested. In order to determine the best traffic flow, a site visit was held in advance of the event with the event organizer, site supervisor, and law enforcement. If appropriate, consider having the hazardous waste hauler participate in the site visit.

Whatever the traffic flow decision, it is important to have the medications removed *before* the car gets to the hazardous waste hauler. Because of the federal (and state) laws that prohibit controlled substances from being in the possession of anyone other than the person to whom they were dispensed or law enforcement, it is essential that there is no chance that the medications could be given to the hazardous waste hauler before controlled substances are segregated.

Traffic configurations tested:

1. Stay in line. In this example, the unwanted medication collection participants entered the same line as the HHW participants. The greeter went to each car and asked if they had unwanted medications. If yes, then the medications were handed to the greeter for transport to the sorting table. The greeter also asked a few survey questions. If the person had no materials for the HHW event, the site layout enabled them to pull out of the line and exit. This may not always be possible, requiring that the vehicle work its way through the HHW line.

In one instance, instead of the greeter removing the medications from the vehicle, the police officer did. He then handed the medications to the pharmacist.

2. Split lines at entrance to site. At another location, drivers were asked when they entered the site if they had unwanted medications. If the answer was yes, they were diverted to the unwanted medication collection table. The greeter removed the medications from the vehicle, and asked the survey questions. If there was also hazardous waste, the driver could enter the HHW line before exiting the site.

3. Dedicated collection site apart from HHW site. One HHW collection program took advantage of the requirement to pre-register and asked registrants if they would be bringing medications. If yes, they were directed to one site for the unwanted medication drop-off and another for the hazardous waste drop-off. Postcards and email were used to confirm HHW registration and to provide directions for sites and procedures.

Pedestrian: In circumstances where individuals will transport the medications from their vehicles to the drop-off table, ensure that they are not crossing lines of traffic.

Site configuration of staff & equipment: Placement of the workstation, law enforcement, and supplies is an important component of the program design. Key considerations include:

- Law enforcement is positioned so that no one can sneak up behind them.
- Law enforcement can see the collection and movement of the medications from the public to the workstation (this may require more than one law enforcement official).
- Indoors.

- Electricity.
- Room for the hazardous waste containers (in use and awaiting use).
- Room for workstations. Each pharmacist, data entry person, and law enforcement official will need a chair. The pharmacist will require a six-foot table. Depending on the size of the event, the data entry person may be able to share that table or may require an additional four-foot table. There should be extra chairs for greeters. In addition, there needs to be room for a hazardous waste drum next to each pharmacist or data entry person, and recycling/trash.

Determine What Will Be Collected

At a minimum, all prescription medications should be accepted. This includes veterinary. It is recommended to accept over-the-counter medications. There is no environmental distinction between prescription and non-prescription medications; both are being detected in water supplies and many over-the-counter medications were at one time prescription, or are lower dosage versions of prescription medications.

If the program is fully equipped for sharps and thermometers, these can be included in the collection event. If the unwanted medication collection event is being held in conjunction with a HHW event, the range of materials accepted can be much broader.

Arrangements for Handling Sharps

Whether sharps are invited into the collection or not you must be equipped to handle them. Many companies offer mail-back service for sharps. Be sure to have the collection containers on site.

Figure 9: Small sharps container, right.

Arrangements for Handling Thermometers

Even if the advertising says "do not bring thermometers," one or two are very likely to be received. Be prepared for this by having a container dedicated to collecting these materials – a five-gallon pail with some kitty litter in the bottom is ideal – and knowing *how* you'll have them recycled. There are mercury-recycling companies that accept devices by mail or other common carrier service, or there may be a mercury-recycling program already in place in the community that will accept them.

Arrange for Staff/Volunteers

The required staffing is described below. The number of individuals required in each role will be a function of the potential size of the event. A minimum of two individuals as greeters is suggested. More than one pharmacist may be necessary, and more than one law enforcement official may also be necessary. For each pharmacist that is inventorying medications, a dedicated data entry person is required, along with a laptop.

Among the factors that will affect how many pharmacists will be required are:

- Population being served.
- How much advertising was done and how effective you think it was (phone calls received, for example).

- Data collection. If the only data being collected is for controlled substances, there will be less demand on the pharmacist(s) at the collection. So, *not* inventorying every item that comes in streamlines the process and requires less effort and potentially staffing.

Requiring pre-registration for the unwanted medication collection is an excellent way to predict the approximate size of the event.

Among the factors affecting how many law enforcement officials will be required are:

- Population being served.
- Site configuration.
- Traffic flow.
- Discretion of law enforcement agency.

It may take several weeks to arrange for law enforcement and pharmacists. Do not advertise a program until arrangements for these essential participants have been finalized.

Equipment and Supplies

Essential on-site equipment and supplies are:

- Tools for counting medications. The pharmacist should provide this.

Figure 10: Counting tray, left.

- Reference documents for researching unknown tablets[8] (book or CD format). Ask the pharmacist to provide this.
- Tables.
- Chairs.
- Hazardous waste containers. These need to be on-site the day before the collection. Have 5-gallon, 16-gallon, 30-gallon, and 55-gallon containers dropped off. The unused containers will be taken back by the hazardous waste company when it picks up the medications. If the collection is being held in conjunction with a HHW event, the containers may be brought to the site on the day of the event.

- Containers for trash, recycling containers for cardboard, paperboard, plastic bags. Arrangements need to be made for trash

[8] There are several resources available, but perhaps the most comprehensive is "Ident-a-Drug Reference," written by Jeff M. Jellin, PharmD, published by the Therapeutic Research Center. It is available in paperback, CD, PDA, and online. By using the codes written on pills in combination with their shape and color it is possible to identify most, if not all, tablets and capsules prescribed in the U.S. www.therapeuticresearch.com

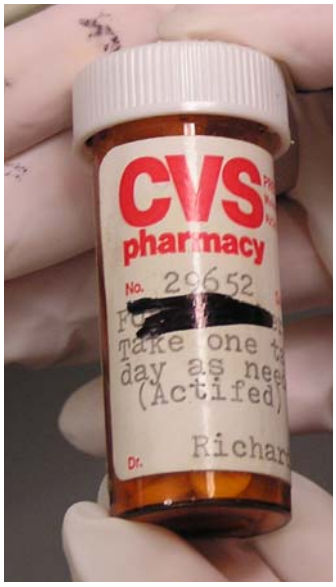
disposal and recycling. This may mean that "someone" will have to remove the materials from the collection site and take them to the disposal/recycling site.

- Gloves (Disposable non-latex preferably. Have at least two sizes (small and large)).
- Ziploc® bags (One-gallon and snack size, with external slide mechanism).
- Laptop(s) (With spreadsheet software and compatible with printer).
- Back-up memory (e.g. memory stick, CD).
- Printer (Compatible with laptop. Be sure there is enough ink and paper).
- Extension cords, grounded.
- Pens.
- Paper.
- Survey forms.
- Clipboard(s).
- Indelible markers (such as SHARPIE®).
- Packing tape.
- Drinking water.
- Toilet and sink.
- Instant hand cleaner/sanitizer.
- Phone.
- Sharps kits.
- Safety vests.

Advertising

In addition to promoting the collection event, advertising serves the purpose of educating the public about the need to properly manage and dispose of unwanted medications. As a new topic, most people have never thought about this and probably have not been saving medications in anticipation of an unwanted medication event. It is important to provide information about the specific collection opportunity, as well as to provide basic education to avoid improper disposal.

Advertising may include newspaper ads, fliers (posted at transfer stations, municipal buildings, and pharmacies), press releases, and community cable announcements. One way to encourage participation is to work in conjunction with a pharmacy.



Critical Information for the Event

- Medications stay in their original containers.
- Personal information can be crossed out, but keep information about medication legible.
- Do not remove labels.
- No sharps.
- No thermometers.
- No medical waste.
- Medications will be destroyed.
- If in a retail setting, no refunds and medications will not be resold or used.

- And, of course, where, when, hours of operation, and who to contact for more information.
- No cost to participate.

General Education

- NEVER flush unwanted or leftover medications down the drain. This can lead to water contamination and is affecting fish, frogs, and drinking water supplies.
- NEVER put the unwanted medicine in the trash. It could be stolen and used, or ingested by animals, potentially resulting in death or illness.
- NEVER give your unwanted medicine to someone else to use – it could kill them.
- NEVER take a prescription that was prescribed for someone else. It could kill *you.*
- Having unwanted medications around the home presents a danger to children, guests, and pets that could accidentally ingest them.

If medication is not used up, please remember *NOT* to put it down the drain or in the trash. If you flush it down the drain, it can cause environmental harm, and in the trash, there is the risk of people stealing the medications.

Proper disposal of outdated, unwanted medications is the right thing to do! Help protect your health, your family, your community, and the environment by disposing of unwanted medications safely.

Figure 11: Sample educational script language

A sample press release and two fliers are in Appendices 2 and 3.

Data Collection

To an extent, the amount and type of data collected will be a function of how you intend to use the data. An inventory of the controlled substances received is required. Federal law dictates that an inventory of the type, dosage, and amount of controlled substances accompany it through final destruction. The point of collection is the moment at which that data should be recorded. Below, figure 12, is a sample controlled substance inventory. Medications come in a number of forms, including tablets, liquid, ointment, inhalers, powders, and patches. The vast majority will be in the form of tablets, but when accounting for the amount of material, be sure to indicate if it is in a form other than a tablet, and what that form is.

Federally Controlled Substances Received Date --- Received by: Name & signature of law enforcement Witnessed by: Name & signature of pharmacist		
DRUG	**DOSAGE**	**AMOUNT**
Acetaminophen/codeine	#3	62 tablets
Alprazolam	0.25 mg	30 tablets
Ambien	10 mg	198 tablets
Clonazepam	.5 mg	177 tablets
Codeine sulphate	30 mg	49 tablets
Concerta	27 mg	27 tablets
Darvocet	100 mg	6 tablets
Diazepam	5 mg	2 tablets
Duragesic	75 mcg	1 tablets
Endodan	4.88/325	42 tablets
Hydrocodone-acetaminophen	650 mg	13 tablets
Hydrocodone/apap	5/500	120 tablets
Robitussin with codeine liquid		230 ml

Figure 12: Example of controlled substance inventory

In addition to an inventory of controlled substances, you may elect to do a complete inventory of all medications received. A sample of this type of inventory is below, figure 13. While this adds to on-site staff time and may require an additional pharmacist, there are several reasons for collecting this data.

1. A complete listing of what is shipped in the hazardous waste containers is available to the hazardous waste company. This can be valuable should there ever be a question of what was shipped and to verify that no controlled substances were in the container.

2. Learn how much material is brought in, on average, by each individual in your service area. This can be useful for planning future events and budgets.

3. Learn how much is able to be packed in what size containers, and if multiple events are held, how packing efficiencies improve and why.

4. National research is being conducted to determine waste in the pharmaceutical industry. You can provide your data to the Community Medical Foundation for Patient Safety national registry of unused and expired medicine http://www.communityofcompetence.com/registries.htm. One caveat about providing data to the registry is that it has data forms that it requests be used in order to provide the necessary information.

Non-controlled Medications Received		
Drug	**Dosage**	**Amount**
Aceon	4 mg	84 tablets
Acepromazine	5 mg	6 tablets
Acetaminophen	325 mg	3 tablets
Acetaminophen	160 mg	96 tablets
Acetaminophen	80 mg	120 tablets
Acetaminophen	500 mg	2 tablets
Acetaminophen, aspirin, caffeine	(headache)	200 tablets
Aciphex	20 mg	9 tablets
Actifed		36 tablets
Advil	200 mg	39 tablets
Advil children's liquid	1 oz	0.5 fluid
Afrin spray		5 ml
Aldactone	100 mg	88 tablets
Aleve	220 mg	66 tablets
Alka-Seltzer	325/1700/1000	14 tablets
Alka-Seltzer morning	500/65	144 tablets
Antibiotic ointment		½ ounce
Clobetasol	.05%	30 g
Erythromycin eye ointment		1.5 g
Fleet enema		1.5 fl oz
Flonase	50 mcg	9 g
Imodium ad	2 mg	21
Imodium ad liquid		1/2 oz
Oxytrol	3.9 mg	6 patches
Tiotropium Bromide Inhalation Powder		2 blisters

Figure 13: Example of non-controlled medication inventory

During the pilots, all of the collections conducted a short survey of participants. A sample is in Appendix 1. At a minimum, we suggest asking where people live, keeping track of the number of people that bring in medication, and learning what advertising strategies worked.

We also suggest that you keep track of:

- The volume of material shipped as hazardous waste.
- The volume of controlled substances.
- The weight of material shipped by the hazardous waste hauler.

This data will help you assess the amount of material brought in by individuals and to strategize about cost saving for future events. For example, might it have been less expensive to pay the hazardous waste hauler by weight rather than by volume?

Costs

How much an unwanted medication collection will cost is, of course, one of the most pressing questions. We cannot provide a definitive answer, but information from the eight pilot collections provides a starting point.

1. **Hazardous waste disposal**. All of the pilot collection events took place in New England and all of the events used Clean Harbors Environmental Services (Clean Harbors) as the hazardous waste hauler. The average person brought in approximately one gallon of material. The per gallon fee to Clean Harbors varied significantly for the events that were held in conjunction with HHW collections as compared to those that were stand-alone.

Type of Collection	Average Per Gallon for Disposal	Transportation Fee
With HHW	$12	None[9]
Stand-alone	$23	$294

Figure 14: Hazardous waste disposal costs

In addition, if the collection was *not* in conjunction with a HHW event, there was a transportation/pick-up fee. As a result, programs that were held in conjunction with HHW programs were much less expensive than stand-alone events. And, the one pilot collection that was held at a permanent HHW collection facility was even less expensive: $7/gallon for disposal and no transportation fee.

We considered pricing by weight instead of by volume, but the cost advantage would not be realized until 55-gallons or more was collected.

2. **Law enforcement**. In all but one instance, overtime was paid for law enforcement participation. The hourly rate varied by jurisdiction, but on average was $45/hour. This ranged from a low of $25/hour to a high of $64.59/hour.

In addition to time on-site, the hours charged are likely to include time getting to the event, going back to the office, and storing the medications in the evidence storage locker. Together, this may add at least one hour to the time charged. In addition, there may be a minimum number of hours that must be covered, and in one instance overtime could only be charged in four-hour blocks, even though the amount of time involved was under eight hours.

3. **Pharmacist**. During the pilots, we were frequently successful in having the services of the pharmacist donated by a sponsoring entity, or by the pharmacist himself. Nationally, the average salary for pharmacists is approximately $50/hour.

[9] One combination HHW/unwanted medication collection was charged a transportation fee because a separate collection site, on the same day as the main collection, was used for the unwanted medication.

4. **Controlled substance destruction**. In no instance did the law enforcement agency charge for the cost of destroying the controlled substances. The volumes were relatively low (ranging from ½ to 2.5 gallons) and in many cases another agency was responsible for the actual destruction of controlled substances.

Although there was no charge to the collections for the controlled substance destruction, the burden that this places upon law enforcement must be acknowledged. This includes using space in evidence storage lockers, which is generally quite limited under the best of circumstances, administrative and reporting obligations, and ensuring that there is witnessed destruction of the medications.

5. **Advertising.** How much advertising is done, and what form it takes, is an event specific activity.

6. **Staff time**. Planning for and implementing an unwanted medication collection is time-consuming. The key factors are securing law enforcement and a pharmacist. Once this is accomplished, the rest of the event is easy to plan, organize, and implement. Examples of time requirements are found in the case studies, Section VIII , below.

7. **Supplies**. Assuming that the majority of supplies are materials that are already on hand or can be readily borrowed, such as tables, chairs, a laptop and printer, the cost of supplies should be quite nominal. Providing water and disposable gloves will likely be the major costs.

Developing partnerships with pharmacies, police departments, hospitals, and other agencies may help to defray some of the costs. We found that police departments are in favor of these collections because it gets controlled substances out of homes and away from potential misuse on the streets. Working with TRIAD and other senior organizations can also be an effective way to collaborate and get the word out about the collections.

VII Conclusion

There is growing interest in and demand for environmentally responsible and legal ways to dispose of unwanted medications. Holding an unwanted medication collection requires careful compliance with state and federal legal requirements, and this can be daunting. This guidance document provides a roadmap for conducting such an event. We can hope that in time, federal and state laws may be modified to make the collection of unwanted medications less complex. This will lead to more collections and greater awareness of the need for safe disposal options.

VIII Case Studies

Case Study #1: Senior Center Montague, Massachusetts
December 2004

Organizer: Franklin County Solid Waste Management District info@franklincountywastedistrict.org

Collection Site: Montague Senior Center, Massachusetts. Held in conjunction with regular social hour.

Hours: Wednesday, 9 – noon.

Staff Hours[10]

Planning: 11 hours

- Gathering information on senior citizen centers, logistics, police, publications, etc.
- Plan logistics with senior center, hazardous waste hauler, local hospital, police.
- Finalizing arrangements with pharmacist, police.
- Site visit

Outreach: 17 hours

- Calls to senior centers
- Develop flier and press release. Distribute.
- Follow-up phone calls

On-site: 4 hours per person

Staffing

- Pharmacist
- Data entry
- Greeter
- Policeman

Follow-up: 5 hours

- Review, report, pay bills

[10] This was the first collection event held and so the number of hours for planning and outreach were high.

Costs

- Staff
  - Data entry – 4 hours @ $30/hour = $120
  - Pharmacist: - services donated
  - Police: 4 hours @ $37.50/hour = $150
  - Organizer -
    - Primary staff = 36 hours, $1,260
    - Assistant staff = 10 hours, $350
- Hazardous waste disposal: $450 ($150 disposal, transportation $300)
- Outreach:
  - 500 fliers & fact sheets - $100
  - 30 mailings of fliers - $12
- Supplies:
  - Poster board & stakes for on-site signage - $5

Participation

- Open to 25 towns.
- Average population: 2,167.
- Furthest distance traveled: 17 miles.
- 4 towns represented.
- 6 participants (two of whom brought in one medication each).
- Received: 140 items[11] (25 controlled (18%)).
- Volume: 5 gallons non-controlled, 1 gallon controlled.

Lessons Learned

- Because several seniors forgot about the event, in the future purchased radio ads for the day of the event would be helpful to remind people about the event.

- Seniors do not like to travel (or are unable to travel) long distances. Holding events in each town/community will most likely prove to be most successful.

- Each participant tends to bring in multiple types of drugs. So, while participation at the pilot was low, the volume collected for a pilot was significant. This gives some indication that if a larger event is held, whether targeted toward the general public or again with seniors, volumes could be quite substantial.

- It is clear that a great deal of education is needed to inform the general public, as well as wastewater treatment officials, boards of heath, and regulators to get the word out about the contamination problems posed by the disposal of drugs down the drain and in the garbage.

- There are better mechanisms available for outreach than we used, including the TRIAD program officers.

[11] An "item" is a container of medications. So, 140 containers of medications were received.

Case Study #2: With Regional Household Hazardous Waste Event
Wilbraham, Massachusetts
September 2005

Organizers: Wilbraham and East Longmeadow (Massachusetts) town recycling representatives

Collection Site: Minnechaug Regional High School, Wilbraham, Massachusetts. Four-town event.

Hours: Saturday, 9 – 1.

Staff Hours

Planning: 25 hours

- Arranging financial contribution by regional hospital
- Site visit
- Site logistics
- Arranging for volunteers to assist (2)
- Arranging for pharmacist
- Arranging for tent, use of printer in building, access to electricity

Outreach: 8 hours

- Press release
- Fliers
- Display advertising (modified display ad for household hazardous waste event)

On-site:

Staffing

- Pharmacist – 6 hours
- Pharmacist assistant – 6 hours
- Data entry/supervisor – 7 hours
- Greeters (2) – 4 hours each
- Policeman – 5 hours

Follow-up: 4 hours

- Data analysis, reports to each town, thank you to hospital, pharmacist, volunteers

Costs

- Staff
  - Data entry/supervisor – 7 hours @ $30/hour = $210
  - Pharmacist: Services donated by regional hospital
  - Police: 5 hours @ $39/hour = $195
  - Greeters – volunteers
  - Pharmacy assistant – volunteer
  - Organizing
    - Primary staff = 33 hours = $1,000
    - Assistant staff = 15 hours = $200

- Hazardous waste disposal: $375. Paid for with donation from regional hospital.
- Tent rental: $300. Paid for with donation from regional hospital.
- Sharps disposal - $100 (unplanned cost)
- Outreach – costs included in hazardous waste collection.

Participation

- Collection open to 4 towns.
- Average population: 12,094.
- Participants from all towns. Furthest distance traveled 11 miles.
- 18 participants.
- 11% of number HHW collection participants brought medications.
- Received: 537 items (13 controlled (2%)).
- Volume: 31 gallons non-controlled, 1 gallon controlled.

Lessons Learned

- It takes many people working together and working hard. Even though there were only 18 participants, it required intensive and continuous work on the part of five people. And this work lasted longer than the scheduled collection hours.

- Access to electricity is an absolute requirement, as is shelter.

- There is a lot of paper recycling potential. It is primarily paperboard. It comes from removing the outer packing from medications. Approximately 15 gallons of paper were recycled and several cardboard boxes.

- There were two gallons of trash and six gallons of sharps. Sharps were *not* accepted at the events, but someone dropped off several boxes of unused hypodermics from a diabetic who had died. And, someone else dropped off a one-gallon sealed red sharps container. Because these materials were buried deep in boxes of lots of medications, we do not know this happened until the people had left.

- A significant number of medication samples came in.

Case Study #3: With Permanent Household Hazardous Waste Collection
Wolfeboro, New Hampshire
August 2006

Organizer: Lakes Regional Household Hazardous Product Facility, and the towns of Wolfeboro and Alton

Collection Site: Lakes Regional Household Hazardous Product Facility.

Hours: Saturday, 9 – noon.

Staff Hours

Planning: 10.5 hours

- Meetings with Board
- Site visit
- Securing pharmacist
- Arrangements with police
- Arrangements with hazardous waste hauler

Outreach: 17.5 hours

- Develop flier, press releases, distribution, radio interview
- Follow-up phone calls

On-site:

Staffing

- Pharmacist - 3.5 hours
- Pharmacist assistant – 3.5 hours
- Data entry– 4 hours
- Greeter– 3 hours
- Policeman– 4 hours

Follow-up: 2.5 hours

- Review, report, bill paying

Costs

- Staff
  - Greeter – volunteer
  - Data entry/site supervisor – 4 hours @ $30/hour = $120
  - Pharmacy assistant = 3.5 hours @ $50/hour = $175
  - Pharmacist: 3.5 hours @ $50/hour = $175.
  - Police: 5.5 hrs @ $38 = $209.00
  - Organizer – volunteer
  - Organizing
    - Primary staff = 25.5 hours @ $25/hour = $625
    - Assistant staff = 5 hours @ $14.75 = $73.75

- Hazardous waste disposal: $138
- Copying: 10 reams of paper = $25
- Supplies: Gloves, markers, water = $35

Participation

- Collection was open to 27 towns.
- Average population: 1,242.
- 10 towns represented.
- Furthest distance was 32 miles.
- 27 participants.
- 40% of number household hazardous waste collection participants brought medications.
- Received: 392 items (16 controlled (4%)).
- Volume: 21 gallons non-controlled, 1 gallon controlled.

Lessons Learned

- We asked each person *before* we took their medications if they had any needles of any type. If they said yes, we explained that they needed to take them home with them. This worked out well and we diverted several people from leaving sharps with us.

- There is a real desire for these collections. Everyone was asked if they would like to have another opportunity for unwanted medication disposals and only one person said no.

- We thought at first that holding it as part of the monthly household hazardous waste event was going to be difficult and disruptive, but it worked very smoothly having it integrated into the regular activities.

- The police were thrilled with the one-gallon of controlled medications we "took off the street." They commented that it was better than several pounds of marijuana in terms of crime and hoped that many more such events would take place.

- It is hard to get the word out and to get people to participate in a rural setting. The travel distances are significant.

Case Study #4: In-pharmacy
South Portland, Maine
February 2005

Organizer: Northeast Recycling Council, Inc. in cooperation with the CVS/Pharmacy Corporation.

Collection Site: CVS Mill Creek, South Portland, Maine

Hours: Saturday, 9 – 5.

Staff Hours
Planning[12]: 80 hours
1. CVS Pharmacy Supervisor – 40 hours, including headquarters discussions
2. Northeast Recycling Council, Inc. – 40 hours

- Conference calls between CVS legal counsel, government relations staff, Maine DEP hazardous waste staff, Clean Harbors (hazardous waste professionals), PharmEcology Associates, LLC, and the USDEA.
- Site and staffing logistics.
- Regulatory compliance.
- Arranging for police.

Outreach: 8 hours
- Designing and obtaining signage.
- Posting signage in store.
- Preparing and distributing press release and fliers. CVS attached fliers about the collection to every purchase made in a CVS in all CVS stores in southern Maine for two weeks preceding the collection.
- Follow-up conversations.

On-site:
Staffing
- Pharmacist – 11 hours
- Pharmacist assistant – 8 hours
- Data entry/site supervisor – 11 hours
- Greeter– 8 hours
- Policeman– 9 hours

Follow-up: 4 hours
- Review, report, pay bills

[12] This was the first in-pharmacy collection and the first collection open to the public, so the number of planning hours was unusually high.

Costs

- *Staff*

On-site

- CVS Pharmacist, 11 hours & CVS Pharmacy Technician, 8 hours: $600
- Greeter, 8 hours @ $25/hour = $200
- Police, 9 hours @$35/hour = $315
- Data entry/site supervisor, 11 hours @ $30/hour = $330

Planning

- CVS, 40 hours = ~ $400
- NERC, 40 hours @ $30/hour = $120

- Hazardous waste disposal: $1,150 ($900 disposal, $250 transportation)
- Advertising:
  - Display ads (3 in Portland Herald): $1,000
  - Printing/copying for in-store fliers: $75

Participation

- Open to whole region.
- Furthest distance traveled: 60 miles.
- People came from 14 towns.
- 51 participants.
- Received: 412 items (37 controlled (9%)).
- Volume: 38 gallons non-controlled, 1.5 gallons controlled.

Lessons Learned

- While we are very grateful to the South Portland Police Department for taking custody of and responsibility for the destruction of the controlled substances, some Advisory Committee members caution that relying on public sector financial support and goodwill should not be considered a sustainable model for the destruction of controlled substances.

- The in-store promotion (including in surrounding area CVS's) was very successful.

- 25% of the participants were *not* regular CVS customers.

- Space behind the counter was very limited. Having another person and container behind the counter would have been difficult without directly interfering with the flow of regular pharmacy business.

- CVS had a separate container available for confidential information destruction, so we were able to take off cardboard packaging with patient information and put it in there. We generated approximately 15- gallons of this material.

- While there were no HIPPA requirements that personal information be destroyed, CVS insisted that all such information be crossed out before being shown to the pharmacist. This required extra volunteer assistance.

Case Study #5: With a Blood Drive
Rutland, Vermont
May 2006

Organizer: Rutland County Solid Waste District rcswd@rcswd.com

Collection Site: Diamond Run Mall, Rutland, Vermont

Hours: Saturday, 11 - 4

Staff Hours
Planning: 35 hours

- Arrangements with American Red Cross, Diamond Run Mall
- Securing pharmacist
- Coordinating with Sheriff's Department
- Site visit

Outreach: 10 hours

- Developing, copying, distributing press releases and fliers
- Follow-up phone calls

On-site:

- Site Supervisor – 7 hours
- Solid Waste Advisory Committee staff – 5 hours
- Greeters – 4 hours each
- Sheriff – 7 hours
- Pharmacist – 5.5 hours
- Pharmacist assistant – 5 hours
- Data entry – 7 hours

Follow-up: 4 hours

- Reports, data analysis

Costs

- Staff
  - Site supervisor – 7 hours @ $25/hour = $175
  - Greeters – 2 volunteers
  - Data entry – 7 hours @ $30/hour = $210
  - Pharmacy assistant - volunteer
  - Pharmacist: 7 hours - donated
  - Sheriff: 6.5 hours @ $25/hour = $162.50
  - Organizer -
    - Primary staff = 59 hours, $1,515
    - Assistant staff = 4 hours, $88
    - Solid Waste Advisory Committee staff = 10 hours, $300

Hazardous waste disposal: $742 ($225 transportation, $517 disposal)
Outreach:

- 2,000 fliers copied - $45
- Fliers mailed to 23 town clerks - $20
- Banners/Posters - $190
- Rutland Herald display ads (2) - $455
- Rutland Business Journal display ad (1) - $265

Total: $975

Supplies:

Lunch & drinks for staff: $35

Participation

- Open to the whole County.
- Participants from 10 towns.
- Furthest distance traveled: 18 miles.
- Average town size among towns represented: 1,375.
- 28 participants.
- Received: 632 items (44 controlled (7%)).
- Volume: 30.5 gallons non-controlled, 2.5 gallons controlled.

Lessons Learned

There was a great deal of outreach and we were disappointed by the number of participants. Flyers were distributed through the Meals on Wheels program (500 copies), a notice was put on the public access channel, articles, and notices were placed in the Rutland Business Journal, Sam's Good News, the Mountain Times, and the Rutland Herald. Flyers were distributed to all the Town Clerk's offices, several libraries and to several nursing homes in the area. Notices were also placed at various locations at the Mall.

- Collaborating with the Mall and with the American Red Cross Blood Drive was a good strategy and one we would repeat.

IX APPENDICES

1. Sample survey
2. Sample press release
3. Sample fliers (2)
4. Collection Overview for State Agency Consideration
5. Best Management Practice Recommendations for the Disposal of Unwanted Medications Not Controlled by the USDEA Generated at Consumer Collection Programs
6. Medications Should Stay in their Original Containers for Disposal
7. Sample Letter to Police Requesting Participation
8. Follow-up Memo to Police Confirming Collection Details
9. References

APPENDIX 1: Sample Survey

Unwanted Medications Collection
DATE

Town you live in: _____

Why is the medicine being disposed of?
□ Didn't like the medicine (made me ill, etc.)
□ Expired/out-of-date medicine
□ Taken off medicine/no longer needed
□ Death (family member/friend)
□ Cleaning house
□ Never used the prescription
□ Drug was pulled off the market
□ Other _____

Whose medication was it?
□ Mine
□ Family or household member
□ Friend
□ Pet

How did you find out about this event?

Comments/Recommendations:

APPENDIX 2: Sample Press Release
LETTERHEAD
TIME SENSITIVE PRESS RELEASE - FOR IMMEDIATE USE

Date
For more information, contact:

Free Collection & Disposal of Unwanted Medication

Do you have unwanted medicine in your home? Help protect your family, community and the environment by properly disposing of them.

On DATE, TIME [Host] is offering a free medicine disposal opportunity. The collection will take place at LOCATION. This is a free event for environmentally safe disposal. NO REFUNDS OR EXCHANGES WILL BE PERMITTED.

WHAT TO BRING TO THE COLLECTION SITE:
- Expired or unwanted prescriptions and medicine,
- Vitamins,
- Veterinary medications, and
- Over the counter medicines.

Do NOT bring thermometers, needles, or medical waste of any type.

WHAT TO DO: This is an opportunity to clean out your medicine cabinets and bring all unwanted medications, including pet medications, to the event for proper disposal.

WHAT WILL HAPPEN: There will be a police officer present to supervise the collection. All medicine will be sent to a hazardous waste facility for secure incineration. ***NO MEDICINE WILL BE RE-USED OR RE-SOLD.***

WHAT ABOUT PERSONAL INFORMATION ON BOTTLE LABELS? Please use a marker to cross off your name. Be sure to leave the name of the medication visible.

WHAT INFORMATION WILL BE ASKED OF YOU? You will be asked a few general questions, such as town of residence, why the medicine is no longer wanted and how long they've been kept, and how you heard about this event. *No personal information will be requested.*

You have the opportunity to safely dispose of your unwanted prescription medications at no cost. Spread the word to your friends and family. This is an important new program that will help to protect your health, your children's and grandchildren's health, our community and the environment.
For more information, call _____

APPENDIX 3: Sample Fliers

HAZARDOUS WASTE & MEDICATION COLLECTION

Saturday, September 9th
Montague Highway Garage
Rt. 2 Park & Ride, Charlemont
Orange Transfer Station

It's Free!

Pre-Registration Required by September 1st
Register online at the xxx website: www.xxx
or fill out the form on the back of this sheet.

For residents of the following towns: xxxxxxxx

WHAT TO BRING

Any substance labeled
CAUSTIC, TOXIC, CORROSIVE,
POISON, FLAMMABLE, WARNING, DANGER, CAUTION

From the yard	From the Garage	From the Workshop	From the Home
Pesticides	Used motor oil	Roofing tar	Oven cleaners
Insect sprays	Engine degreaser	Solvents	Furniture polish
Fungicides	Gas treatments	Varnish	Upholstery cleaner
Flea powder	Gasoline	Sealants	Metal polish
Herbicides	Kerosene	Wood strippers	Mothballs
Root killers	Solvents	Rust inhibitors	Spot remover
Rodent killers	Automobile batteries	Paint thinners	Drain cleaners
Muriatic acid	Brake fluid	Degreasers	Toilet cleaners
No-Pest strips	Carburetor cleaner	Wood preservatives	Fluorescent light bulbs
Pool chemicals	Creosote sealer	Wood strippers	Mercury thermometers
Lighter fluid	Asphalt sealer	Stains	Mercury thermostats
	Refrigerants	Lead & oil–based paints	Chemistry kits
	Antifreeze	(*No latex paint)*	Arts & crafts supplies
	Transmission fluid	Photo chemicals	NiCad & button batteries

What Not To Bring

Latex paint, empty containers from hazardous products, asbestos, gas cylinders, radioactive material, explosives (including ammunition & fireworks)

Special Unwanted Medications Collection

To be held in conjunction with the Household Hazardous Waste Collection on September 9th, at the Montague Highway Garage. This is an opportunity for you to clean out your medicine cabinets, drawers, & cupboards & bring all expired & unwanted medications (prescription & over-the-counter) for proper disposal. Pre-registration required. For more information contact the Solid Waste District at xxx or visit: www.xxx

Do you have unwanted medications around your home? Help protect your family, community, and the environment by properly disposing of them.

FREE UNWANTED/EXPIRED MEDICATIONS COLLECTION

SATURDAY, SEPTEMBER 9TH

MONTAGUE HIGHWAY GARAGE

By Appointment Only.
You Must Pre-Register to Participate.

It's easy to participate, it's FREE, and you can enter to win a $25 gift certificate from Brooks Pharmacy!

WHAT TO BRING TO THE COLLECTION

◆ Expired or unwanted prescriptions or over-the-counter medicines ◆ Drugs that didn't work for you, a family member, or pet ◆ Drugs that are no longer used ◆ Medicine from deceased family members ◆ Unknown tablets and capsules

Register on-line at:
www.franklincountywastedistrict.org
or call 772-2438.

APPENDIX 4: Collection Overview for State Agency Consideration

NERC

Northeast Recycling Council, Inc.

139 Main Street, Suite 401• Brattleboro, Vermont 05301-2800
802.254.3636 • 802.254.5870 fax • www.nerc.org •info@nerc.org

How an Unwanted Medication Collection & Destruction Project Would Operate in New Hampshire

BACKGROUND

The Northeast Recycling Council, Inc. (NERC), a non-profit organization that works on issues related to solid waste, recycling, and decreased toxicity of the solid waste stream, has been awarded grants by the U.S. Environmental Protection Agency and Department of Agriculture to develop environmentally sound and legal strategies for collecting and destroying unwanted medications from consumers.

The need for such a project arose from the growing scientific evidence that over-the-counter and prescription medications are finding their way into water supplies. While non-metabolized medication is certainly the primary source of this contamination, disposing of unwanted medications down the drain or in the trash has added to this problem. This project has sought to develop and test strategies for preventing unwanted medications from environmentally unsound disposal, while ensuring that they are destroyed and protected from diversion.

A component of the grants is to develop and test collection strategies throughout the multi-state region. All collections are supervised by law enforcement and all collected medications are destroyed. In 2005, collections were held in Maine and Massachusetts, with the hope of holding events in Connecticut, New Hampshire, New Jersey, and Vermont in 2006.

Any collection event held in New Hampshire will fully implement all best management practices and legal requirements that have been identified and developed through these grants. The development of collection strategies has been the result of the collaborative efforts of many individuals and organizations, including:

- Rutland County (VT) Solid Waste Management District
- Rutland County (VT) Sheriff's Department
- CVS headquarters legal and government relations offices
- Franklin County (MA) Solid Waste Management District
- Maine Department of Environmental Protection
- Massachusetts Department of Public Health
- Massachusetts Board of Pharmacy
- Massachusetts Department of Environmental Protection

- Vermont Agency of Natural Resources
- Clean Harbors Environmental Services
- PharmEcology Associates, LLC
- Pharmacy Supervisor for CVS Mill Creek, South Portland, Maine
- Bayer Pharmaceutical

In addition, guidance was provided by the U.S. Drug Enforcement Agency (DEA).

The Law

Federal Drug Law

The U.S. DEA prohibits the transfer of dispensed controlled substances from an individual to a pharmacist, reverse distributor, or any other entity registered with the U.S. DEA to handle or manage controlled substances. The only exception is in the case of a drug recall or a dispensing error. However, controlled substances may pass into the control and custody of law enforcement officials because they fall outside of the registrant system.

Thus, in order to legally collect unwanted controlled substances it is *an absolute necessity* that law enforcement officials be on-site, participate in the collection, and take physical control and custody of all controlled substances.

Federal Hazardous Waste Law

The U.S. EPA Resource Conservation and Recovery Act regulates the transportation, treatment, and disposal of hazardous waste, but exempts waste generated by consumers (household waste) from regulation. Some prescribed and over-the-counter medications are known to require management as a hazardous waste when they come from an entity other than an individual.

In addition, the U.S. Environmental Protection Agency has made clear that reverse distributors may not accept dispensed medications as part of the waste stream. It would be a violation of federal hazardous waste laws.

State Hazardous Waste Law

Like federal law, New Hampshire state hazardous waste laws do not regulate individuals. Thus, materials that have hazardous waste characteristics may, by law, be disposed of in the trash. PharmEcology Associates, LLC has estimated that up to 25% of over-the-counter and prescription medications, by type not by volume, would be considered a hazardous waste if generated by a business.

Collection Logistics

The EPA and USDA grants to NERC include several tasks prerequisite to conducting an unwanted medication collection:

- Identify strategies for the collection and end-of-life management of unwanted medications that comply with state and federal solid waste, hazardous waste, and drug laws.

- Determine and implement best management practices for disposal of unwanted medications.
- Test various collection strategies.

Each of these requirements have been carefully researched and implemented for the pilots held to date. Of particular significance is that all medications collected are destroyed, and that controlled and non-controlled substances are segregated from each other with controlled substances passing directly into the custody of law enforcement.

All medications are destroyed

A multi-stakeholder Advisory Committee that includes individuals with extensive experience in the management and disposal of medications, as well as pharmacists, solid waste and environmental professionals has provided essential guidance and direction for this project. An underlying premise has been that all collected medications, whether controlled or not, will be destroyed per U.S. DEA destruction criteria for controlled substances. In addition, controlled medications are subject to witnessed destruction. The Committee has determined that non-controlled medications should be managed and incinerated as hazardous waste.

Among the reasons for the determination to destroy non-controlled substances as hazardous waste were:

1. Decreased access to medications, thus preventing diversion and inappropriate use of medications, as well as minimizing the risk of poisoning children and pets.
2. The presence of medications with hazardous waste characteristics in the waste mix.
3. Physical destruction of the medications for the purpose of rendering them unrecoverable, as required by federal drug law, is considered to be essentially a practical impossibility in most settings, with the exception of hazardous waste incineration.[13]
4. Sending a message about the importance of safe end-of-life management of medications.
5. Avoiding water pollution from medications in landfills.

Controlled substances are segregated from non-controlled substances

In order to ensure that controlled substances are secure from the risk of diversion, all controlled substances pass from the consumer to the custody of law enforcement. The collection strategy **relies upon the expertise of a pharmacist** to determine which medications are regulated as controlled substances and to direct law enforcement to take custody of these materials. While it is illegal for pharmacists to take possession of dispensed medications, they may provide advice about their character.

Testing of Collection Strategies

The overriding goals that have guided the development of the collection strategy have been to:

[13] Conversation with Vicky Seeger, U.S. DEA, October 2004

1) Be in full compliance with federal and state laws;
2) Maximize site safety; and
3) Ensure the safe disposal of the medications.

NERC has already participated in the successful implementation of pilots in a Senior Center, a pharmacy, as part of a conference session, and as part of Household Hazardous Waste Collections.

Collection Details

Any unwanted medication collection held in New Hampshire will, of necessity, be limited to a few hours on a specific day. This is due to the requirement of the active involvement of law enforcement and the practical limitations that this imposes. In addition, any event will be held in partnership with a New Hampshire organization or subdivision of the State. NERC will *not* be the host or lead organization. Nor will it be providing financial support. NERC's role is limited to technical assistance, guidance, data collection, and facilitation.

STAFF

No matter the venue, there is certain staff essential to the safe and legal conduct of an unwanted medication collection event.

a. Law enforcement – on- and off-site
b. Pharmacist
c. Greeter
d. Data entry
e. Supervisor
f. Hazardous waste company

Following are staff-specific roles and responsibilities.

LAW ENFORCEMENT

On-site:

- Safety (prevent diversion)
- Take custody of controlled substances
- Sign and date inventory of controlled substances as witness that materials received
- Initial sealed container of controlled substances being taken off-site
- Transport controlled substances to secure evidence storage locker
- If pharmacist does not conduct inventory, law enforcement official conducts physical inventory
- Stay on-site until all medications have been packed, sealed, and placed onto hazardous waste company truck.

Off-site:

a) Maintain secured locked possession of controlled substances along with U.S. DEA required inventory
b) Arrange for and ensure U.S. DEA authorized destruction of controlled substances

Pharmacist

1) Determine if a medication is a controlled substance
2) Inventory controlled substances. The U.S. DEA required inventory is the name of the medication, dosage, and amount. For example:

Federally Controlled Substances		
DRUG	**DOSAGE**	**AMOUNT**
acetaminophen with codeine	#3	62
Alprazolam	0.25 mg	30
Ambien	10 mg	198
Clonazepam	0.5 mg	177
codeine sulphate	30 mg	49
Concerta	27 mg	27

- Put medications back in original container and hand to law enforcement official
- Sign and date the printed inventory as a witness that accurately lists what went into custody of law enforcement
- Answer questions from the public and discuss why the medication may be "unwanted" by the patient to determine if there is any underlying issue that may require follow up medical attention.
- Optional role: conduct inventory for all medications brought to event

Greeter

- Direct people to collection
- Provide pens for obscuring personal information, as desired
- Optional: Conduct survey

Data Entry

- Enter inventory of medications
- Print out inventory for witnessing
- Maintain copy of witnessed inventory

Site Supervisor

- Ensure that all operations are running smoothly
- Ensure that law enforcement does not leave site until all medications have been removed by hazardous waste company
- Maintain records
- Answer operational questions as they arise

Hazardous Waste Company

- Provide drums/containers for collection of non-controlled substances
- Seal containers, prepare paperwork, transport non-controlled substances for hazardous waste destruction
- Takes place on same day, at close of event
- Provides tracking paperwork from point of collection through destruction
- Incinerates non-controlled substances in licensed hazardous waste incinerator

SITE SAFETY

A great deal of time and effort goes into determining the best on-site staffing, traffic flow, security, and equipment. The primary considerations are public safety, ensuring that medications are not diverted, and that safe and legal disposal occurs. The presence of law enforcement, the hazardous waste company, and ensuring that the site is configured to minimize the risk of diversion is essential.

DESTRUCTION OF MEDICATIONS

All non-regulated medications will be packed and disposed of as hazardous waste through a licensed hazardous waste hauler. In the instance of New Hampshire, because the potential pilot location has not been identified, we do not yet know who the hazardous waste hauler may be. To date, Clean Harbors has been the company used for all events. With any hazardous waste hauler that is used, the medications will be packed in containers that meet federal Department of Transportation requirements for the shipment of hazardous waste. The materials will then be sent to a hazardous waste incineration facility that is authorized to dispose of medications.

As mentioned above, the controlled substances are destroyed as required by the U.S. DEA, through the programs and systems in place with the custodial law enforcement agency.

Conclusion

Every effort has been made to design a safe and secure protocol for the collection and destruction of unwanted medications from the public. The advice and guidance of the New Hampshire Board of Pharmacy and other agencies is encouraged and welcomed to help ensure that any collection event held in the state meets all required procedures, operates safely, and effectively.

For more information, please contact:
Lynn Rubinstein, Executive Director, Northeast Recycling Council
lynn@nerc.org
802-254-3636

APPENDIX 5: Best Management Practice Recommendations for the Disposal of Unwanted Medications Not Controlled by the USDEA, Generated at Consumer Collection Programs

Introduction

When deciding how best to dispose of collected unwanted medications, several factors should influence the decision making process. Naturally, cost will be one factor. But when making a decision about which strategy to use in your community, be sure to evaluate whether an incinerator or landfill is permitted to handle medications; and if so, under what conditions.

It is also important to be able to track the unwanted medications from the point of collection through disposal. Due to the increased value and attractiveness of diverting medications to other users and uses, there is a growing concern about theft. As a collected material, it may appear to be a particularly "attractive" waste to scavenge. Precautions should be taken.

The disposal hierarchy that follows is based on the following essential criteria:

1. Controlled substances are separated from the medications before being shipped for disposal, and there are no controlled substances knowingly included.

A USDEA controlled substance is a medication that because of its abuse potential is regulated by the federal Drug Enforcement Administration. Because of this, controlled substances cannot be accepted by anyone other than a law enforcement official at a collection site, and are subject to specific federal disposal regulations; including witnessed destruction.

2. Under all circumstances, state and federal drug management and disposal regulations as well as solid waste management and disposal laws and permits must be observed.

Recommended Best Management Practices for the Disposal of Non-Controlled Substances[ii]

BEST: Hazardous waste incineration

SECOND BEST: Municipal solid waste incineration facility, as long as the facility has an operating permit that permits the incineration of waste pharmaceuticals. This option is based on the assumption that the State in which the medication was collected and will be disposed regards household generated hazardous waste as excluded from RCRA and state hazardous waste regulations, even if consolidated at a collection event.

NOT A BEST MANAGEMENT PRACTICE, but if no other available option

Solid Waste Landfill as long as the facility's operating permit allows for the disposal of pharmaceuticals. In order to prevent diversion or theft, the containers should be immediately made non-recoverable, such as buried upon receipt, or a like-procedure appropriate to the specific facility. Again, the assumption is made that the states of origin and disposal regard household generated hazardous waste as excluded from RCRA regulations, including Land Disposal Restriction Forms, when accumulated at a central collection facility.

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NEVER! Flush it down the drain or toilet.

[i] These recommendations are *not* those of these Agencies.

[ii] Other destruction options may be available, but due diligence would be required to assess the level of destruction and compliance with federal and state regulations.

APPENDIX 6: Medications Should Stay in their Original Containers for Disposal

Primarily due to the wasted space that medication containers take-up in disposal drums, the question has arisen "why not dump the medications out and dispose of the containers separately?" The Advisory Committee for this project has concluded that the medications should stay in their original containers for disposal. There are many reasons for this decision, but they include:

1. Loose, unlabeled medications pose a health hazard if diverted and ingested. The practice lf some people to sell and/or consume unlabeled drugs as "trail mix" can lead to serious overdoses and death. It is not good medication management policy under any circumstances.

2. Encouraging consumers to combine them at home and then bring them in is even more fraught with risk. You only need one case of accidental poisoning to give the program a black eye.

3. Some states, like Maine, regulate household generated waste as hazardous (if it meets RCRA criteria) if returned to a facility. The drum would need to be manifested with waste codes, such as P, U, and D. If the medications were co-mingled it would be very hard to verify the contents if the barrel is inspected at the incinerator which could cause the load to be rejected.

4. Some medications are hazardous waste and even those that aren't can have hazardous properties. Handling of loose pills, especially broken pills, present a risk to individuals handling them. In addition, the dust and fumes that can be released through the "dropping" of loose pills into a container may present additional worker exposure concerns.

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5. Anytime you remove medications from the identifying labels there are worker exposure and public safety risks.

APPENDIX 7: Sample Letter to Police Requesting Participation

NERC

Northeast Recycling Council, Inc.

139 Main Street, Suite 401• Brattleboro, Vermont 05301-2800
802.254.3636 • 802.254.5870 fax • www.nerc.org •info@nerc.org

Date

Chief Ed Googins
South Portland Police Dept.
30 Anthoine St
South Portland, ME 04106

Dear Chief Googins,

As we discussed on the phone today, the Northeast Recycling Council, Inc. (NERC) hopes to hold an unwanted medication event in cooperation with CVS at its S. Portland store on Saturday, February 5, 2005, from 9 – 5.

We will be accepting both controlled and non-controlled medications for incineration. In order to comply with federal and state DEA requirements, a law enforcement official must be present and take physical possession of the controlled substances. We are asking for the services of a South Portland Law Enforcement Officer to assist us with the collection.

The overall flow of the event will be as follows:

1) CVS will be dedicating one of its "intake" windows to this event.
2) An individual will bring in unwanted medications and hand them to the CVS pharmacist.
3) The pharmacist will inventory the medications (type, dosage, and amount) and make a determination if it is a controlled substance.
4) If it is a controlled substance, it will be handed to the Law Enforcement Officer to be placed in a designated container (most likely a 5-gallon bucket with a locking lid).
5) At the end of the day, the Law Enforcement Officer will be presented with an inventory of the controlled substances and be asked to sign copies of the document certifying to having received the drugs. It will be witnessed by the CVS pharmacist.
6) Then the Law Enforcement Officer will take the controlled substances back to the police station and place them, along with the inventory, in a locked storage area. We anticipate that at the most this will involve 3 5-gallon pails.

Due to the nature of the event, and wanting to be sure that everything runs as smoothly as possible, we ask that the Law Enforcement Officer be on site at 8:30 a.m. We propose to compensate for the outside overtime from 8:30 – 5:30. If extra time is involved due to currently unforeseen circumstances, we will pay for that time as well. We understand that the hourly outside overtime rate is $35.03/hour.

I look forward to hearing back from you on this matter. Naturally, if you have any questions, I will be happy to answer them. I look forward to working together on this exciting new project.

Sincerely,

Lynn Rubinstein
Executive Director

APPENDIX 8: Follow-up Memo to Police Confirming Collection Details

MEMO

Date: xxx
To: Raymond Zukowski, Montague Police Chief
From: Athena Lee Bradley, Program Director
RE: Collection of Unwanted/Expired Medication

This is to confirm the information that we discussed over the phone about the unwanted medications collection on Saturday, September 9th at the Montague Highway Garage.

The officer to staff the event should be onsite by 8:00 am. I am not sure yet what time we will be done, but definitely by late morning. I will be able to confirm the time better as we get closer to the date, since people have to preregister with us. The officer should be in full uniform. We will have a staff person and a registered pharmacist onsite, along with volunteers to help with traffic flow.

The pharmacist will do the sorting of the controlled from the non-controlled substances. He will do a count and a staff person will keep a record on a laptop; an inventory will be printed for your officer at the end of the collection. During the collection event the controlled substances are handed directly from the pharmacist to the police officer for placement in a 5-gallon pail. The pail is to remain with the officer at all times.

At the end of the collection we will put the collected controlled substances into an envelope, and secure it with duct tape. A copy of the inventory will be placed inside the envelope and another copy taped to the outside. A large label identifying the collected medications as “non-evidence and non-confiscated” will also be placed on the envelope.

This collection method meets the criteria for both the Drug Enforcement Agency (DEA) and the Massachusetts Department of Public Health (MA DPH). In past collections we have not had more than a half gallon’s worth of controlled substances, which fit into a manila envelope.

Under the guidelines established by MA DPH, the collected controlled substances are to be stored “in a readily separable and distinguishable manner from the evidence/confiscated medications.” They must be kept in identified separate containers and isolated in some manner from the evidence/confiscated medications. They can be kept in the storage locker, but law enforcement needs to have a non-criminal incident report associated with the collected medications. As per MA DPH requirements, we will arrange for destruction of the collected controlled substances at a DEA approved incinerator.

Our collection site has a covered area in case of rain. We will have coffee and other beverages. There is a restroom on site.

We will reimburse the department for the officer's time. Please call me at 772-2438 if you have any concerns or comments about the collection.

Thank you for your assistance.

APPENDIX 9: References

1. EPA website on Pharmaceuticals and Personal Care Products (PPCPs) as Environmental Pollutants
http://www.epa.gov/nerlesd1/chemistry/pharma

2. Brochure from Michigan on Pharmaceutical Disposal
http://www.deq.state.mi.us/documents/deq-ess-tas-cau-RXbrochure.pdf

3. California Integrated Waste Management Board - Guidance on Medical Waste at Home
http://www.ciwmb.ca.gov/WPIE/HealthCare/PPCP.htm

4. Managing Pharmaceutical Waste (Hazardous Waste and Toxics Reduction Program, Washington State, Department of Ecology)
http://www.ecy.wa.gov/programs/hwtr/pharmaceuticals/index.html

5. Recycling and Disposal of Dispensed Drugs" (NAPRA, National Association of Pharmacy Regulatory Authorities - Canada)
http://www.napra.org/docs/0/97/194/184.asp

6. An Assessment of U.S. Pharmaceutical Donations: Players, Processes, and Products (Reich MR, ed., Harvard School of Public Health, 1999, Boston, MA)
http://www.hsph.harvard.edu/faculty/reich/donations/

7. Post-Consumer Residual Stewardship Program Regulation Medications 2001 Annual Report (Canada)
http://wlapwww.gov.bc.ca/epd/epdpa/ips/meds/meds2001.html

8. USAID Guidelines for Donating Pharmaceuticals and Medical Supplies
http://www.usaid.gov/hum_response/pvc/ofdadrug.doc

Collecting Unwanted Household Pharmaceuticals

Regulatory Guidance for Organizers of Household Pharmaceutical Collection Events

PUB-WA 1024 2006
August 9, 2006 *(rev. 7/8/09)*

WISCONSIN DEPT. OF NATURAL RESOURCES
Waste & Materials Management
P.O. Box 7921
Madison, WI 53707-7921

Introduction

Household pharmaceuticals include household prescription, over-the-counter and illegal drugs. These are in the form of pills, ointments, liquids, sprays, pre-filled syringes, injection vials, etc.

The traditional ways of managing unwanted household pharmaceuticals, such as flushing them down the toilet, pouring them down the drain, or throwing them in the trash, may be harming our environment and threatening public health.

You can help reduce the potential for harm by collecting unwanted household pharmaceuticals for better management.

Collecting unwanted household pharmaceuticals requires careful planning because of the diversity of the materials and the various legal or regulatory requirements that may apply. This guidance focuses on the regulatory aspects of collecting unwanted household pharmaceuticals. For guidance on other aspects, see Appendix A.

Requirements for Managing Collected Unwanted Household Pharmaceuticals

Unwanted household pharmaceuticals may be regulated by more than one set of requirements. Key considerations are below. Additional details and links to further information are included in Appendix B.

Controlled Substances

These are drugs that, because of their abuse potential, are regulated by the U.S. Drug Enforcement Administration (DEA). The DEA regulations require law enforcement officers to take possession of any controlled substances you collect and to maintain possession of them at all times, including witnessing their destruction.

Collected controlled substances must be segregated from other wastes, logged, put in sealed containers, securely transported and stored, and properly destroyed. The DEA regulations do not allow a law enforcement officer to transfer custody of collected household controlled substances to a waste management contractor, even if the contractor is DEA-registered for managing controlled substances that have not been dispensed to patients.

Many local law enforcement agencies are already familiar with the DEA requirements for managing controlled substances.

If you collect controlled substances, the DEA requirement to have a law enforcement officer present at your collection will likely limit it to a special one-day or several-day event.

Type of Collected Unwanted Household Pharmaceuticals	Applicable Requirement[1]					
	U.S. DEA	WI DHS	WI DNR			U.S. DOT
	Controlled Substances	Cancer & Chronic Disease Drug Repository	Infectious Waste	Hazardous Waste	Solid Waste	Hazardous Materials
Controlled Substances	√		√[2]	√[3]	√[3]	√
Cancer & Chronic Disease Repository Drugs & Supplies		√				√
Other Drugs			√[2]	√[3]	√[3]	√

[1] For more information on these requirements, see Appendix B.
[2] Only if associated with a sharp.
[3] A June 7, 2009 Wisconsin Department of Natural Resources (DNR) memo states the agency's intent to conditionally use discretion in enforcing hazardous waste and solid waste rules, as they apply to the management of collected household pharmaceutical waste. The conditions for the enforcement discretion are listed in Appendix B.

Cancer and Chronic Disease Drug Repository

Wisconsin allows some unused cancer and chronic disease drugs and supplies to be donated to participating pharmacies or medical facilities for use by other patients. To be eligible for donation, a cancer or chronic disease drug must not be a controlled substance, must be in its original, unopened tamper-evident unit dose packaging (i.e., no bottles), and must not expire until at least six months after the donation is made.

Donated cancer and chronic disease drugs and supplies need to be managed according to the applicable Wisconsin Department of Health Services (DHS) cancer and chronic disease drug repository rules. However, as long as they are still eligible for use by others, donated cancer and chronic disease drugs and supplies are not regulated as waste.

Infectious Waste

In Wisconsin, waste sharps are presumed to be infectious waste. Sharps include medical equipment — such as hypodermic needles, syringes with needles attached and lancets — that may cause punctures or cuts. If you accept sharps at your collection, you will need to manage them according to the applicable DNR medical waste requirements.

To be exempt from licensing and other infectious waste storage requirements, you may need to register in advance with DNR as a sharps collection station. If you do not want the public to bring sharps to your collection site on days other than collection days, you may ask DNR to leave your location off its public list of sharps collection stations.

Solid Waste and Hazardous Waste

Solid and hazardous wastes are regulated by the DNR under the Wisconsin Administrative Code (NR 500 series and NR 600 series, respectively). The DNR issued a memo, dated June 7, 2009, stating the agency's intent to use discretion in enforcing solid and hazardous waste requirements applicable to collected household pharmaceuticals, provided a number of conditions are met. Conditions include managing controlled substances in accordance with DEA requirements, taking precautions to prevent theft or accidental exposure, and ensuring safe and nuisance-free collection, storage, transportation and management of collected pharmaceuticals. See Appendix B for the complete list of conditions and a link to the enforcement discretion memo.

If you collect any pharmaceutical waste from sources other than households, this must be managed according to applicable DNR solid and hazardous waste requirements. If you collect pharmaceutical waste, which is assumed or determined to be hazardous waste, from very small quantity generators (VSQGs), you may manage it according to the DNR's reduced requirements for VSQG hazardous waste collection facilities. Non-households

that generate more than 2.2 pounds of acute hazardous waste (e.g., unused coumadin drugs) per month are considered large quantity generators (LQGs). As such, there may be few non-household pharmaceutical waste generators (e.g., pharmacies and medical facilities) from which you may accept waste under the reduced requirements.

If you mix non-household and household pharmaceutical waste, the enforcement discretion does not apply to the mixture and you must manage it according to the applicable DNR hazardous waste and solid waste requirements.

Special Forms of Unwanted Household Pharmaceuticals

These include pharmaceuticals associated with sharps (e.g., pre-filled syringes such as EpiPen®s) and pharmaceuticals in aerosol form (e.g., some asthma inhalers, anti-fungals and pain relievers).

Pharmaceuticals associated with sharps are also regulated as infectious waste, discussed above. Additional information on infectious waste regulation is provided in Appendix B.

Because incinerators may not be allowed to, or may choose not to incinerate aerosols, pharmaceuticals in aerosol form may need to be separated from other pharmaceuticals prior to incineration.

Other Unwanted Household Healthcare Items (Non-Pharmaceuticals)

In addition to collecting unwanted household pharmaceuticals, you may want to accept other unwanted household healthcare items, such as sharps that do not contain drugs or thermometers, which may contain mercury. As noted above, sharps are presumed to be infectious waste and must be managed accordingly.

If you accept mercury-containing thermometers, you may be able to manage them under Wisconsin's universal waste requirements, which call for you to send the thermometers to a recycler for mercury recovery. Details regarding the universal waste requirements are included in the DNR guidance on Management of Universal Wastes in Wisconsin (http://dnr.wi.gov/org/aw/wm/publications/anewpub/WA742.pdf).

Collection Participants

You should have pharmacists on-site during your collection to identify and sort pharmaceuticals and non-pharmaceuticals (e.g., controlled substances, cancer and chronic disease repository drugs and supplies, and other drugs).

If you accept controlled substances, you must arrange for qualified law enforcement officers to be present during your collection and to take and maintain possession of the controlled substances. Even if you do not accept controlled substances, you may still want law enforcement officers present to make household members more comfortable and to discourage theft.

You may also want to ask your waste management contractor or similarly qualified individuals to help with any other needed material sorting and to help prepare sorted materials for compliance with the applicable requirements for infectious wastes and hazardous materials.

All state of Wisconsin agencies, institutions and campuses (e.g., UW System) are required to use the state of Wisconsin hazardous waste management contract (http://vendornet.state.wi.us). Wisconsin municipalities are also eligible to use the state contract, which may save money compared to contracting directly with a waste management company.

Unused and Expired Medicine Registry

While it is not required, you may want to voluntarily provide information to the registry on the unused and expired medicines you collect. Information on the registry is available at:
www.communityofcompetence.com/UEM1.pdf

Off-site Transportation

Persons transporting sharps off-site may need a DNR infectious waste transportation license and may need to comply with other infectious waste transportation requirements. However, persons transporting less than 50 pounds of infectious waste per calendar month do not need an infectious waste transportation license.

In addition to the DNR requirements, which only apply to wastes, the DOT's hazardous materials transportation regulations may apply to any wastes and non-wastes you collect and offer for transport, or that you yourself transport away from your facility.

Recommended Best Management Practices

The recommended best management practices for collected materials are:

- donate eligible cancer and chronic disease drugs and supplies for use by other patients;
- have any mercury-containing devices such as thermometers recycled to recover the mercury; and
- destroy other materials using hazardous waste incineration.

A less desirable alternative to hazardous waste incineration may be solid waste incineration or medical waste incineration, if the incinerator's license or permit allows incineration of the waste, and the incinerator's state exempts collected household pharmaceutical waste from regulation as hazardous waste.

Finally, the best management practice for pharmaceuticals in aerosol form, which may not be allowed to be incinerated, is to have the containers recycled as scrap metal. As with incinerators, your waste management contractor should be able to confirm whether/which facilities have the technical capabilities and are properly authorized to manage these items.

Further Information

Other collection resources and links to further information are included in the attached appendices.

This publication is available in alternative format upon request. Please call 608-266-2111 for more information or e-mail DNRWasteMaterials@wisconsin.gov

Photos used with the permission of the Monroe County Solid Waste Management District, Bloomington, Indiana and the Groundwater Guardians for the Marshfield Area, Marshfield, Wisconsin.

Disclaimer: *This document is intended solely as guidance and does not include any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any manner addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.*

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.

Appendix A: Other Collection Resources

The University of Wisconsin-Extension, Solid and Hazardous Waste Education Center (SHWEC) maintains a "Medicine Collection Days" database that lists upcoming pharmaceutical collection events throughout Wisconsin. The database is accessible through the SHWEC Web site: http://www4.uwm.edu/shwec/pharmaceuticalCollection/viewRecords.cfm

Information on prescription drug and hazardous waste collection grants, Wisconsin Department of Agriculture, Trade and Consumer Protection, www.datcp.state.wi.us/arm/agriculture/pest-fert/pesticides/clean-sweep

Wisconsin Hazardous Waste Collection Programs, University of Wisconsin-Extension, Environmental Resources Center, www.uwex.edu/erc/hazwste.html

Disposal of Unwanted Medicines: A Resource for Action in Your Community, Illinois-Indiana Sea Grant Program, University of Illinois – Urbana, www.iisgcp.org/unwantedmeds

A number of resources including publications, guidance documents and case studies are available at The Northeast Recycling Council, Inc. Web site (http://www.nerc.org). A full listing of the resources provided can be viewed by clicking the Topic Areas link and the Unwanted Medications Collections link from the NERC home page.

Pharmaceutical Waste, Wisconsin DNR, http://dnr.wi.gov/org/aw/wm/pharm/pharm.htm

Pharmaceuticals and Personal Care Products (PPCPs), U.S. Environmental Protection Agency, http://www.epa.gov/ppcp/

Pharmwaste listserv, national pharmaceutical waste management discussion, lists.dep.state.fl.us/cgi-bin/mailman/listinfo/pharmwaste

Environment and Pharmaceuticals (including *Environmentally classified pharmaceuticals*), Department of the Environment and Department of Drug Management and Informatics, Stockholm County Council, Sweden, www.janusinfo.se/imcms/servlet/GetDoc?meta_id=7236

Appendix B: More Information on Requirements that May Apply

Wisconsin DNR

Infectious Waste. Sharps are defined in s. NR 500.03(209), Wis. Adm. Code, and are listed in s. NR 526.05(1)(a), Wis. Adm. Code. Waste sharps are presumed to be infectious waste as defined in s. 287.07(7)(c)1.c., Wis. Stats. As infectious waste, waste sharps need to be managed according to the applicable medical waste requirements in ch. NR 526, Wis. Adm. Code. There are exemptions from licensing and some other infectious waste storage requirements in s. NR 526.09(2), Wis. Adm. Code. To be exempt, a sharps collection station needs to meet the operating requirements in s. NR 526.09(5), Wis. Adm. Code.

Web site: http://dnr.wi.gov/org/aw/wm/medinf

Hazardous Waste. This waste generally includes discarded material that has any of the four hazardous waste characteristics (ignitability, corrosivity, reactivity or toxicity) or is specifically listed as hazardous waste. This waste is defined in s. NR 661.03, Wis. Adm. Code, and needs to be managed according to the applicable hazardous waste requirements in chs. NR 660 to 673, Wis. Adm. Code, and ch. 291, Wis. Stats.

Web site: http://dnr.wi.gov/org/aw/wm/hazard

Licensed hazardous waste transporters lists: http://dnr.wi.gov/org/aw/wm/faclists

Enforcement Discretion: A June 7, 2009 DNR memo states the agency's intent to use discretion in enforcing solid and hazardous waste rules applicable to the management of collected household pharmaceutical waste during a two-year evaluation period, if the conditions listed below are met:

1. Controlled substances will be managed according to DEA requirements.
2. Reasonable precautions will be taken to prevent theft of or accidental exposure to collected household pharmaceuticals.
3. Sharps are presumed to be infectious waste in Wisconsin and are regulated under ch. NR 526, Wis. Adm. Code. Therefore all sharps, including those associated with household pharmaceuticals, will be managed in accordance with ch. NR 526.
4. Collected household pharmaceuticals will be collected, stored, transported and managed in a safe and nuisance free manner and to prevent releases to the environment. Practices necessary to ensure this include, but are not limited to, the following:
   a. Collected household pharmaceuticals will not be disposed in a publicly owned treatment works or other wastewater treatment facility.
   b. To the extent possible, and with due consideration to the compatibility of the waste stream to a particular management method, pharmaceuticals will be destroyed so as to render them unrecoverable in the future, and in order to minimize their potential impact upon the environment. Incineration will be done in accordance with state air management requirements and any associated permits regulating the facility. Open burning of pharmaceuticals or plastic containers will not be conducted under any circumstances.
   c. Collected household pharmaceuticals that are destined for disposal at a licensed solid waste landfill will be managed according to the Land Disposal Restrictions, ch. NR 668, Wis. Adm. Code.
   d. Operators of household pharmaceutical collection facilities and events will verify that the facilities or entities employed to manage collected pharmaceuticals are permitted or otherwise authorized to accept and manage this waste, and will ensure that the final disposition/destruction of all collected household pharmaceuticals can be ascertained.

Enforcement Discretion Memorandum:
http://dnr.wi.gov/org/aw/wm/publications/anewpub/WA1052.pdf

Wisconsin DNR (continued)

Solid Waste. This waste generally includes discarded or salvageable material that is not a hazardous waste. Solid waste is defined in s. 289.01(33), Wis. Stats., and is subject to the applicable solid waste recycling and management requirements in chs. NR 500 to 524 and 544, Wis. Adm. Code, and chs. 287 and 289, Wis. Stats.

Web sites: http://dnr.wi.gov/org/aw/wm/solid or http://dnr.wi.gov/org/aw/wm/recycle

Solid waste and/or recyclables transporters lists: http://dnr.wi.gov/org/aw/wm/faclists

Enforcement Discretion: The June 7, 2009 enforcement discretion memo discussed above also pertains to Solid Waste regulation.

U.S. DEA – Controlled Substances

These substances are drugs or other substances, or immediate precursors, included in Schedule I, II, III, IV, or V of Title 21, Code of Federal Regulations (CFR), Sections 1308.11 to 1308.15. Controlled substances need to be managed according to the applicable regulations in 21 CFR Parts 1300 to 1316.

Web site: www.deadiversion.usdoj.gov

Controlled substances list: www.deadiversion.usdoj.gov/schedules/alpha/alphabetical.htm

Contact (West Milwaukee): (414) 336-7300

Wisconsin DHS – Cancer and Chronic Disease Drug Repository

Cancer and chronic disease repository drugs and supplies need to be managed according to the applicable rules in ch. DHS 148, Wis. Adm. Code.

Web site: dhs.wi.gov/bqaconsumer/cancerdrugreposy.htm

Rules: www.legis.state.wi.us/rsb/code/dhs/dhs148.pdf

U.S. Department of Transportation (DOT) – Hazardous Materials

These materials are substances or materials that the DOT has determined are capable of posing an unreasonable risk to health, safety and property when transported in commerce. Hazardous material is defined in 49 CFR 171.8 and is subject to the applicable Hazardous Materials Regulations (HMR) in 49 CFR Parts 171 to 180. Those regulations apply to the classification, packaging, hazard communication, incident reporting, handling and transportation of hazardous materials.

Activities excluded from or otherwise not subject to the requirements of the HMR are listed in 49 CFR 171.1(d). These include the transportation of a hazardous material in a motor vehicle, aircraft or vessel operated by a federal, state or local government employee solely for noncommercial federal, state or local government purposes. Despite the exclusion, it is always a good management practice to follow the HMRs anyway.

Web site: www.phmsa.dot.gov/hazmat

Hazardous Materials Registration Company Search:
https://hazmatonline.phmsa.dot.gov/Services/companylookup.aspx

Contact: (800) 467-4922

E. REFERENCE LIST OF CONTROLLED PRESCRIPTION DRUGS (DRUG CLASS & NAME)

C3 ACETAMINOPHEN W/ CODEINE
C2 ACTIQ
C2 ADDERALL
C2 ADDERALL XR
C4 ADIPEX-P
C3 ADIPOST
C4 ALPROZOLAM
C5 AMBENYL
C4 AMBIEN
C4 AMIDRINE
C2 AMYSTAL SOD
C3 ANADROL
C3 ANAPLEX
C3 ANDRODERM
C3 ANDROGEL
C3 ANDROID
C3 ANDROXY
C3 ANEXSIA
C3 APAPICODEINE
C4 AQUACHLORAL
C3 ASCOMP W/CODEINE
C3 ASPIRIN/CODEINE
C2 ASTRAMORPH SDV
C4 ATIVAN
C3 ATUSS
C2 AVIZA
C2 B & O
C4 BALACET`
C3 BALTUSSIN
C3 BANCAP-HC
C2 BELLANDONNA
C3 BONTRIL
C5 BROMODIPHEN/CODEINE
C3 BROMPHEN/HYDROCOD/PSE
C3 BROMPLEX
C5 BRONTEX LIQUID
C3 BRONTEX TABLETS
C3 BROVEX HC
C3 B-TUSS LIQUID
C3 BUPRENEX
C3 BUPRENORPHINE
C3 BUTALBITAL
C3 BUTISOL
C4 BUTORPHANOL
C3 CANGES hc
C5 CAPTIAL W/ CODEINE
C3 CARISOPRODOL/ASA/CODEINE
C3 C-CDF HC
C3 C-COF XP
C5 CHERACOL SYRUP
C5 CHERATUSSIN AC SYRUP
C5 CHERATUSSIN DAC SYRUP
C4 CHLORAL JYDRATE
C4 CHLORDIAZEPOX
C4 CHLORDIAZEPOX/AMITRIP
C4 CHLORDIAZEPOXIDE
C4 CLONAZEPAM
C4 CLONAZEPAM ODT
C4 CLORAZEPATE
C4 CLORAZEPATE DIPOTASSIUM
C2 COCAINE
C3 CODAFED EXPECTORANT SYRUP
C3 CODAL DH SYRUP
C2 CODEINE
C3 CODEINE/GUIAFEN
C3 CODICLEAR DH
C3 CODIMAL DH SYRUP
C5 CODIMAL PH SYRUP
C3 CODITUSS DH SYRUP
C3 CO-GESIC
C3 COLDCOUGH HC SYRUP
C3 COLDCOUGH HCM
C3 COLREX CPD
C2 COMBUNOX
C2 CONCERTA
C5 COUGH AND COLD PD SYRUP
C3 COUGHTUSS LIQUID
C3 CRANTEX HC SYRUP
C5 CYNDAL EXPECT SOLN
C3 CYNDAL HD SYRUP
C3 CYTUSS HC SYRUP
C4 DALMANE
C3 DAMASON-P
C2 D-AMPHETAMINE SALT
C4 DARVOCET
C4 DARVON
C3 DE-CHLOR HC LIQUID
C3 DE-CHLOR MR SYRUP
C3 DE-CHLOR NX LIQUID
C3 DE-CHLOR-HD LIQUID
C5 DECOHISTINE EXPECTORANT
C3 DELATESTRYL SYRINGE
C2 DEMEROL
C3 DEPO-TESTOSTERONE
C2 DESOXYN
C3 DESPEC-EXP SYRUP
C5 DESPEC-PD SYRUP
C2 DETHADOSE
C3 DETUSS LIQUID
C2 DEXEDRINE
C2 DEXTROAMPHETAMINE
C2 DEXTROSTAT
C3 DHC PLUS CAP
C5 DIABETIC TUSSIN C LIQUID
C4 DIASTAT ACUDIAL
C4 DIAZEPAM
C3 DIDREX
C4 DIETHYLPROPION
C5 DIHISTINE DH ELIXIR
C5 DIHISTINE EXPECTORANT
C3 DIHYDRO-CP SYRUP
C2 DILAUDID
C5 DIPHENOXYLATE/ATROPINE
C2 DOLOPHINE
C3 DOLOREX FORTE
C3 DONATUSSIN DC SYRUP
C3 DONTUSSIN MAX LIQUID
C4 DORAL
C3 DRITUSS HS EXILIR
C3 DROCON-CS SYRUP
C3 DURADAL HD PLUS SYRUP
C3 DURADAL HD SYRUP
C4 DURADRIN
C2 DURAGESIC
C3 DURATUSS HD ELIXIR
C3 DYNATUSS HC SYRUP`
C3 DYNEX HD SYRUP
C3 DYTAN-HC SUSPENSION
C4 E1UAGESIC
C3 ED-TLC SYRUP
C3 ED-TUSS HC SYRUP
C3 ENDACOF TABLETS
C3 ENDACOF-HC SYRUP
C3 ENDACOF-XP SYRUP
C3 ENDAL-HD PLUS SYRUP
C3 ENDAL-HD SYRUP
C2 ENDOCET
C3 ENTEX HC LIQUID
C4 ESTAZOLAM
C3 EXCOF LIQUID
C3 EXCOF-SF LIQUID
C3 EXTENDRYL HC TABLETS
C4 FASTIN
C2 FENTANYL
C3 FIORICET/CODEINE
C3 FIORINAL
C3 FIORINAL W/CODEINE
C3 FIORTAL
C3 FIRST TESTOSTERONE 2%CREAM
C3 FIRST TESTOSTERONE 2%OINTMENT
C4 FLURAZEPAM
C3 FLUTUSS HC
C3 FLUTUSS XP
C2 FOCALIN
C3 GENTEX HC
C5 GILTUSS C PEDIATRIC
C3 GILTUSS HC LIQUID
C3 GUAIFEN/CONDEINE
C5 GUALIFENESIN AC LIQUID
C5 GUIATUSS AC SYRUP
C4 HALCION
C3 HALOTESTIN
C3 H-C TUSSIVE D SYRUP
C3 H-C TUSSIVE SYRUP
C3 HC-IBUPROFEN
C3 HC-PE-GFN SYRUP
C3 HC-POT GUAI LIQUID
C3 HC-PSE-CPM SYRUP
C3 HC-PSEUDO-CARBINOX
C3 HC-PSEUDO-GUIA
C3 HISTEX HC
C3 HISTINEX D
C3 HISTINEX HC
C3 HISTINEX PV
C3 HISTUSSIN HC
C3 HYCET ORAL SOLUTION
C3 HYCODAN
C3 HYCOMINE COMPOUND
C3 HYCOTUSS EXPECTORANT
C3 HYDEX PD LIQUID
C3 HYDONE
C3 HYDRO DP
C3 HYDRO GP
C3 HYDRO PC
C3 HYDROCODONE BIT/GUAIFENESIN
C3 HYDROCODONE/APAP
C3 HYDROMET
C2 HYDROMORPHONE
C3 HYDRON CP
C3 HYDRON EX
C3 HYDRON KGS
C3 HYDRO-PC
C2 HYDROSTAT
C3 HYDRO-TUSSIN
C3 HY-KXP
C3 HYPHEN
C3 HY-PHEN
C2 INFUMORPH
C4 IONAMIN
C5 IOPHEN C-NR
C4 ISO-ACETAZONE
C4 ISOMETH/APAP/DICHLOR
C2 KADIAN
C3 KETAMINE
C3 KGS-HC
C4 KLONOPIN
C3 KWELCOF
C3 KYDROCET
C3 KYDRON PSC
C2 LEV DROMORAN
C3 LEVALL
C2 LEVORPHANOL
C4 LIBRIUM
C4 LIMBITROL
C3 LIQUICOUGH HC
C3 LIQUI-TUSS HD
C5 LOFENE
C5 LOMOTIL
C5 LONOX
C4 LORAZEPAM
C3 LORCET
C3 LORTAB
C3 LORTUSS HC
C4 LUNESTA
C5 LYRICA

This list was compiled from the DEA list of class 2-5 controlled substances and is complete to the best of our knowledge as of July 2005. It should be used as a reference only and Marshall County SWMD shall not be responsible for any errors or omissions in this document.

E. REFERENCE LIST OF CONTROLLED PRESCRIPTION DRUGS (DRUG CLASS & NAME)

C5 M[PHEN
C3 MARCOF EXPECTORANT
C3 MARGESIC-H
C3 MARINOL
C3 MAX HC
C3 MAXIDONE
C3 MAXI-TUSS
C3 M-CLEAR
C4 MEBARAL
C3 MEDTUSS
C3 MELFIAT
C3 M-END
C2 MEPERGAN FORTIS
C2 MEPERIDINE
C4 MEPHOBARBITAL
C4 MEPROBAMATE
C4 MERIDIA
C2 METADATE
C2 METHADONE
C3 METHITEST
C2 METHYLIN
C2 METHYLPHENIDATE
C3 METHYLTESTOSTERONE
C4 MICRAININ
C4 MIDAZOLAM
C4 MIDCHLOR
C4 MIDRIN
C4 MIGQUIN
C4 MIGRATINE
C4 MIGRAZONE
C4 MIGRIN-A
C3 MINTUSS
C2 MORPHINE
C4 MOTOFEN
C2 MS CONTIN
C2 MS/L MORPHINE
C2 MSIR
C5 MYTUSSIN
C3 NALEX
C3 NANDROLONE
C4 NIRAVAM
C3 NORCO
C3 NOTUSS
C5 NOVAHISTINE
C3 NUCOFED
C3 NUCOTUSS
C5 NUCOTUSS
C3 NUDAL
C2 NUMORPHAN
C2 OPIUM
C2 ORAMORPH
C3 OXANDRIN
C4 OXAZEPAM
C2 OXYCODONE
C2 OXYCONTIN
C2 OXYDOSE
C2 OXYFAST
C2 OXYIR
C3 PANCOF
C3 PAREGORIC
C5 PAXIPAMPEDIACOF
C3 PEDIATEX
C4 PENTAZOCINE/APAP
C4 PENTAZOCINE/NOLOXONE
C2 PERCOCET
C2 PERCODAN
C2 PERCOLONE
C3 PHENA-HC
C3 PHENAPHEN WITH CODEINE
C3 PHENAPHEN/COD
C3 PHENDIMETRAZINE
C5 PHENERGAN
C4 PHENOBARB
C4 PHENOBARBITAL
C4 PHENTERMINE
C3 PHENY/HYDROCOD/CHLORPHEN
C3 PHENYL/HYDROCOD/CHLOR
C3 PHENYLEPHRINE
C4 PHENYLHISTINE
C3 PHEUMOTUSSIN
C4 PLACIDYL
C3 PLEGINE
C3 POLY-TUSSIN
C3 PRELU-Z
C3 PRO-CLEAR
C3 PRO-COF
C4 PRO-FAST
C3 PROLEX
C5 PROMETHAZINE
C4 PROPACET
C4 PROPO-N/APAP
C4 PROPOXY-N-ACET
C4 PROPOXYPHENE CPD
C4 PROPOXYPHENE HCL
C4 PROPOXYPHENE/APAP
C4 PROPOXYPHENE-N
C4 PROPOXYPHENE-N/APAP
C3 PRO-RED SYRUP
C4 PROSOM
C3 PROTUSS
C3 PROTUSS-D
C4 PROVIGIL
C3 P-V TUSSIN
C3 QUAL-TUSSIN DC
C3 QUINDAL-HD
C3 QUINTEX-HC
C3 Q-V TUSSIN
C3 RELACON-HC NR
C3 RELACON-HC NR
C3 REPREXAIN
C4 RESTORIL
C2 RITALIN
C2 RMS
C5 ROBAFEN AC
C5 ROBITUSSIN A-C
C5 ROBITUSSIN DAC
C2 ROXANOL
C2 ROXICET
C2 ROXICODONE
C5 RYNA-C
C5 RYNA-CX
C4 SANOREX
C2 SECONAL SODIUM
C4 SERAX
C3 SOMA COMPOUNT W/CODEINE
C4 SONATA
C4 STADOL
C3 STAGESIC
C3 STATUSS GREE
C3 STRIANT TRANSBUCCAL PATCH
C3 SUBOXONE
C3 SUBUTEX
C5 SUDATUSS SF
C2 SUFENTANIL
C3 SU-TUSS HD
C3 SYMTAN SUSPENSION
C3 SYNALGOS DC
C4 TALACEN
C4 TALWIN
C4 TALWIN NX
C4 TALWIN-CPD
C4 TEMAZEPAM
C4 TENUATE
C4 TENUATE DOSPANE
C3 TESLAC
C3 TESTIM
C3 TESTODERM
C3 TESTODERM TTS
C3 TESTOPEL PELLETS
C3 TESTOSTERONE CYP
C3 TESTOSTERONE CYPIONATE
C3 TESTOSTERONE ENAN
C3 TESTOSTERONE ENANTHATE
C3 TESTOSTERONE MICRONIZED
C3 TESTOSTERONE POWDER
C3 TESTOSTERONE PROPIONATE
C3 TESTRED
C3 TOURO HC
C4 TRANXENE SF
C4 TRANXENE T
C5 TRIACIN-C
C3 TRIANT-HC
C4 TRIAZOLAM
C5 TRIPROLIDINE/PSEUDOEPHED/COD
C3 TRI-VENT HC
C2 TUINAL
C3 TUSDEC-HC
C5 TUSNEL PEDIATRIC-C
C3 TUSNEL-HC
C3 TUSSAFED HC
C3 TUSSAFED-HCG
C5 TUSSAR-2
C5 TUSSAR-SF
C3 TUSSEND
C3 TUSSEND EXPECTORANT SOLN
C3 TUSSIGON
C3 TUSSINATE
C3 TUSSIONEX SUSPENSIONS
C5 TUSSI-ORGANIDIN NR
C3 TUSSO-DF
C3 TUSSO-HC ER
C3 TYLENOL W/ CODEINE
C3 TYLENOL/COD
C2 TYLOX
C3 UGESIC
C3 UNI-COF
C3 UNI-LEV
C3 UNI-TRICOF HC
C3 UNI-TUSS HC
C4 VALIUM
C4 VALIUM AMP
C4 VALIUM VIAL
C3 VANACET
C3 VANACON SOL
C4 VERSED
C3 VICODIN
C3 VICODIN ES
C3 VICODIN HP
C3 VICOPROFEN
C3 VI-Q-TUSS
C3 VISVEX HC
C3 VOPAC
C3 WELLTUSS EXPECTORANT
C3 WELLTUSS HC
C3 WINSTROL
C4 WYGESIC
C4 XANAX
C4 XANAX XR
C3 XODOL
C3 XPECT-HC
C3 XYREN
C4 ZANTRYL
C3 Z-COF HC
C3 ZTUSS EXPECTORANT
C3 ZTUSS EXPECTORANT
C3 ZTUSS ZT
C3 ZYDONE
C3 ZYMINE HC

This list was compiled from the DEA list of class 2-5 controlled substances and is complete to the best of our knowledge as of July 2005. It should be used as a reference only and Marshall County SWMD shall not be responsible for any errors or omissions in this document.

DIVERSION PROGRAMS
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ARCOS
CHEMICALS
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CSOS
IMPORT AND EXPORT
NFLIS
QUOTAS
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REPORTS REQUIRED BY 21 CFR

RESOURCES
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SIGNIFICANT GUIDANCE DOCUMENTS

LINKS

Controlled Substance Schedules > List of Controlled Substances

Controlled Substance Schedules

Disclaimer

Section 812 of the Controlled Substances Act (21 U.S.C. §801 et seq.) (CSA) lists substances which were controlled in 1970 when the law was enacted. Since then, approximately 160 substances have been added, removed, or transferred from one schedule to another. The current official list of controlled substances can be found in section 1308 of the most recent issue of Title 21 Code of Federal Regulations (CFR) Part 1300 to end (21 CFR §1308) and the final rules which were published in the Federal Register subsequent to the issuance of the CFR.

This list describes the basic or parent chemical and do not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may be controlled substances. **These lists are intended as general references and are not comprehensive listings of all controlled substances.** Please note that a substance need not be listed as a controlled substance to be treated as a Schedule I substance for criminal prosecution. A controlled substance analogue is a substance which is intended for human consumption and is structurally or pharmacologically substantially similar to or is represented as being similar to a Schedule I or Schedule II substance and is not an approved medication in the United States. (See 21 U.S.C. §802(32)(A) for the definition of a controlled substance analogue and 21 U.S.C. §813 for the schedule.)

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

FEDERAL AGENCIES & RELATED
INDUSTRY RELATED

REGISTRATION VALIDATION

CASES AGAINST DOCTORS

Regulations.gov
Your voice in Federal decision-making

Controlled Substance Ordering System (CSOS)
www.DEAecom.gov

GOOD MEDICINE, BAD BEHAVIOR:
Drug Diversion in America

To view PDF documents
Get Adobe Reader

Lists of Scheduling Actions, Controlled Substances, Regulated Chemicals

May 2009

Scheduling Actions	Controlled Substances	List I and II Regulated Chemicals
Alphabetical Order	Alphabetical Order	Alphabetical Order
Chronological Order	DEA Drug Code Number	DEA Number
	CSA Schedule	Chronological Order
		List Number
		Illicit Uses and Threshold Quantities

Abbreviations

2C-B	4-Bromo-2,5-dimethoxyphenethylamine
2C-T-7	2,5-Dimethoxy-4(n)-propylthiophenethylamine
BZP	N-Benzylpiperazine
DMT	Dimethyltryptamine
DOM	4-Methyl-2,5-dimethoxyamphetamine
GBL	Gamma butyrolactone
GHB	Gamma hydroxybutyric acid, gamma hydroxybutyrate, 4-hydroxybutanoic acid, sodium oxybate
LAAM	Levo-alphacetylmethadol
LSD	Lysergic acid diethylamide, lysergide
MDA	3,4-Methylenedioxyamphetamine
MDE	3,4-Methylenedioxy-N-ethylamphetamine
MDMA	3,4-Methylenedioxymethamphetamine
MPPP	1-Methyl-4-phenyl-4-propionoxypiperidine
P2P	Phenyl-2-propanone, phenylacetone
PCC	1-Piperidinocyclohexanecarbonitrile
PCE	N-Ethyl-1-phenylcyclohexylamine
PCH	1-Phenylcyclohexylamine
PCP	1-(1-Phenylcyclohexyl)piperidine, phencyclidine
PEPAP	1-(2-Phenylethyl)-4-phenyl-4-acetoxypiperidine

External links included in this website should not be construed as an official endorsement of the views contained therein.

PHP	1-(1-Phenylcyclohexyl)pyrrolidine
SPA	(-)-1-Dimethylamino-1,2-diphenylethane
TCP	1-[1-(2-Thienyl)cyclohexyl]piperidine
TCPy	1-[1-(2-Thienyl)cyclohexyl]pyrrolidine
THC	Tetrahydrocannabinols
THG	Tetrahydrogestrinone

U.S. National Registry for Unused or Expired Medications
Questionnaire for Returned Medications by Individual Donor©

CRG Medical Foundation for Patient Safety

(CRGFORM0019-Individual Donor Version 01-07-05)

Use black or blue ink pen and print information legibly. Check boxes as appropriate. Follow skip pattern as indicated.

---

1. Zip Code:_____ **TODAY'S DATE: _____**
2. County:_____

Questions 3-5 are optional. You do not have to answer Questions 3-5, and you can skip to Question 6. If you wish to answer them, your answers will be used for research to learn about the demographic characteristics of donors.

3. Age: _____
4. Gender: ❑ Male ❑ Female
5. Ethnic background:
   - ❑ White, not of Hispanic origin
   - ❑ Black, not of Hispanic origin
   - ❑ Hispanic
   - ❑ Asian or Pacific Islander
   - ❑ American Indian, Aleut, or Eskimo

---

6. Is this your first time to use this Registry to record your unused or expired medicines?

   ❑ No ❑ Yes, **Go To Question # 8**.

7. How many times have you used this Registry before today? _____

MEDICATIONS INFORMATION

8. Whom does the unused or expired medicine(s) belong to?
   - ❑ Me
   - ❑ Family
   - ❑ Friend
   - ❑ A patient, not related to family
   - ❑ Pet
   - ❑ Unknown
   - ❑ Other: _____

GO TO NEXT PAGE.

U.S. National Registry for Unused or Expired Medications
Data Collection Instrument for Returned Medications by Individual Donor©

CRG Medical Foundation for Patient Safety

(CRGFORM0019-Individual Donor Version 01-07-05)

9. What are the medications you are returning? Use the table below to list your medicines.

					Drug Type		**Why was drug returned? Check box or write reason in space provided.**							
List drug(s) from pill bottle or package. **Name of Drug**	From pill bottle or written prescription, write the numbers after NDC, if available **NDC Number**	**Liquid, gel, or ointment**	**Concentration Or Dosage**	Write approx. number of pills or capsules or amount of liquids **Quantity** (e.g. approx number of pills or capsules, half tube, etc.)	**Prescription**	**Over-the-counter**	Drug expired or outdated	Doctor ordered new drug	Patient felt better	Adverse or allergic reaction	Patient died or moved away	Did not want to take it	Unknown	**Other Reason**

Use Supplemental Form (CRGFORM0016) for additional medications and attach form(s) to this questionnaire.

10. May I ask you a few more questions? ❑ Yes, **Go To Question 11.** ❑ No, **STOP! END OF QUESTIONNAIRE. Thank you!**

U.S. National Registry for Unused or Expired Medications
Questionnaire for Returned Medications by Individual Donor©

CRG Medical Foundation for Patient Safety

(CRGFORM0019-Individual Donor Version 01-07-05)

This section of the Questionnaire is optional; answers will be used for research only.

11. How did you hear about this Registry?

- ❑ My doctor or nurse
- ❑ Family or friend
- ❑ Newspaper or radio
- ❑ AARP chapter or other community groups (such as church, social organizations)
- ❑ Internet websearch
- ❑ Other:_____

12. How have you been getting rid of unused or expired medicines?

- ❑ Threw away in garbage
- ❑ Flushed down toilet or sink
- ❑ Gave to my doctor or nurse
- ❑ Gave to my friend or family
- ❑ Other:_____

13. Did you find this Registry easy and convenient to record unused or expired medicines?

❑ Yes ❑ No, Why? _____

14. Would you support a state or national effort to expand and promote this Registry?

❑ Yes ❑ No

15. Would you recommend this Registry to your family, friends, and/or co-workers?

❑ Yes ❑ No

16. Are you aware of the potential harm to the environment caused by improper disposal of drugs?

❑ Yes ❑ No

17. Would you like to get more information about this Registry and how to safely get rid of unused or expired medicines?

❑ Yes ❑ No

18. Do you have any other comments about this Registry?

_____

_____

_____

_____

END OF QUESTIONNAIRE.

THANK YOU!

Unused & Expired Medicine Registry
Collection Event Return Form©

Collector or Collection Sponsor:_____ **Date**:_____ **Page**___ **of** ___

Contact Person:_____ **Phone**:_____ **Email**:_____

Mailing Address:_____ **City**:_____ **State**:_____ **Zip Code**:_____

INSTRUCTIONS: Complete this form with information from the participants and their returned prescription labels, pill bottles, or medicine packages. For more space, use Collection Event Return-Supplemental Form (CMFFORM18). **1**. Write participant's zip code. **2**. Write name of each medicine. **3**. Check with "**X**" if medicine is liquid, gel, or ointment. **4**. Write the concentration or dosage of each medicine. **5**. Write the number of pills, capsules, tablets, or amount of liquid. **6**. Check with "**X**" if medicine is prescription or over-the-counter or federally controlled. **7.** Check with "**X**" for the main reason medicine is returned, or write in other reason in space provided.

					6. Drug Type			**7. Why was drug returned? Check box or write the main reason in space provided.**								
Write 5-digit zip code of each individual return-ing medications.	From the bottle or package, write the common trade name or generic name of the medicine.	**3.**	Write the strength of the medicine (e.g., 30 mg)	Write approx. number of pills or capsules or amount of liquids												
1. Zip Code	**2. Name of Medicine**	**Liquid, gel, or ointment**	**4. Concentration or Dosage**	**5. Quantity**	**Prescription**	**Over-the-counter**	**Federally Controlled**	Drug expired or outdated	Doctor discontinued drug	Doctor ordered new drug	Patient felt better	Adverse or allergic reaction	Patient died or moved away	Did not want to take it	Unknown	**Other Reason**

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Unused & Expired Medicine Registry
Collection Event Return-Supplemental Form©

Collector or Collection Sponsor:_____ Date:_____ Page___ of ___

Contact Person:_____ [**Note**: Attach this page to original CMFFORM17-UEMR Collection Event Return Form]

					6. Drug Type			7. Why was drug returned? Check box or write reason in space provided.								
Write 5-digit zip code of each individual returning medications. **1. Zip Code**	From the bottle or package, write the common trade name or generic name of this medicine. **2. Name of Medicine**	**3. Liquid, gel, or ointment**	Write the strength of the medicine (e.g., 30 mg) **4. Concentration or Dosage**	Write approx. number of pills or capsules or amount of liquids **5. Quantity**	**Prescription**	**Over-the-counter**	**Federally Controlled**	Drug expired or outdated	Doctor discontinued drug	Doctor ordered new drug	Patient felt better	Adverse or allergic reaction	Patient died or moved away	Did not want to take it	Unknown	**Other Reason**

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Community Medical Foundation for Patient Safety
RESEARCH ABSTRACT

"Unused and Expired Drugs: A Patient Safety & Public Health Epidemic in the Making"

Stevan Gressitt, M.D., Matthew C. Mireles, Ph.D., M.P.H., and Elizabeth A. Smith, Ph.D.

Unused and expired medications in the U.S. and other countries exact an incredible toll on patient safety and public health. In the U.S., an estimated minimum of $1 billion of prescription drugs are thrown away each year. Increasing availability, marketing, and purchase of prescription and over-the-counter pharmaceutical products, coupled with the tendency of patients to stockpile drugs at home, is a unique phenomenon that has long been ignored. Compounding this problem is that no state or federal program exists to safely collect unwanted drugs and dispose of them properly, except through reverse distributors and only for large healthcare institutions.

Many significant problems are associated with unused and expired drugs in the home. While medication errors are commonly studied in hospital settings, few studies investigate patient safety related to medications after the patient is discharged. Elderly patients, who use the most prescription drugs, must deal with cumbersome lists of drugs, dosages, and time schedules. Drugs often are left unsecured in cabinets and on counters. Improper use of drugs may cause an overdose and drug interactions. Accidental poisoning from ingestion of drugs among children and pets often occurs in homes where medicine is easily accessible. About 40% of poisoning among children occurs in grandparents' homes. Drug diversion, involving theft, burglary, illegal possession, and drug abuse, is a major crime in households where narcotics are present. All are a significant patient safety problem of epidemic proportion. Furthermore, the disposable of unwanted drugs as household trash or by flushing them down the sink or toilet is unwise and dangerous to the environment, potentially contaminating the water supply.

The Main Benzodiazepine Study Group, Northeast Occupational Exchange, and CRG Medical Foundation for Patient Safety have assumed the leadership to study the problem of unused and expired medicine. Using the new concept and methodology of Community of Competence™, this study group, consisting of many experts from numerous professions located in different states and countries, convenes monthly to discuss this universal problem and develop solutions. One solution was to establish the *Unused Medicine Registry* to collect information about any drugs that should be removed from the home. This study presents the methods, data collection instruments, and preliminary results from several community-based drug return programs to safely collect and transfer the unused and expired drugs from the patient's home to the proper authorities for approved destruction.

Preliminary analyses of *Registry* data show unique patterns of frequently unused medications, including those that are federally controlled. In one community in Maine, approximately 40% of the prescription drugs were returned unused by the patients. *Antidepressants* were the most commonly unused drugs. In another community in Maine, an estimate cash value of the returned drugs was calculated at more than $67,000, from a collection involving 106 individuals who returned more than 1200 drugs. Average time of storage at home is 2-3 years; some drugs were kept up to 10 years.

Medicine should be taken by patients as prescribed by doctors in order to maximize therapeutic benefits. Otherwise, when patients stop taking them, it becomes a medical compliance issue, as well as a tremendous financial cost. Stockpiling unused and expired drugs beyond expiration is a patient safety problem. Indiscriminately disposing of these drugs creates an environmental hazard with potential long-term consequences. Results from one Canadian study showed that *antibiotics* and *anti-infectives* were the most commonly unused and discarded drugs, which promote multiple-resistant bacteria when they are introduced into the ground water.

Presently, no systematic program exists to collect and destroy patients' unwanted drugs. Patients cannot return dispensed drugs back to the first registrants--physicians and pharmacists. The *Unused Medicine Registry* is a first step to collecting the data for understanding the magnitude of the problem. Data from the *Registry* will be used to design better community-based collection programs to remove unwanted drugs from the home and safely destroy them. An immediate and far-reaching application of the *Registry* data is to improve international donations of needed drugs as humanitarian aids in preparation for or during the aftermath of a natural catastrophe, such as the tsunami in Indonesia and the recent earthquake in Pakistan. Other research and solutions applications of data are being considered.

Reverse Distributor Registrants Table

Updated December 2006

The following is an unofficial list of reverse distributors/returns processors and their telephone numbers. New registrations for reverse distributors/returns processors continue to be issued and changes in the registration information is likely to occur.

Callers inquiring about returns processors/reverse distributors should be referred to the appropriate local DEA office.

NOTE: DEA's Final Rule entitled, "Definition and Registration of Reverse Distributors" was published in the Federal Register on May 2, 2005, and became effective on that date.

ARIZONA

Professional Returns & Destruction, LLC	RP0228583
3738 W. Commonwealth, Suite 14 Chandler, Arizona 85226	
(480) 814-7168	Schedules 2, 3, 3N, 4, 5

CALIFORNIA

EXP Pharmaceutical Services Corporation	RE0190188
48021 Warm Springs Blvd. Fremont, California 94539-7497	
1-800-350-0397 or (510) 476-0909	Schedules 1, 2, 3, 3N, 4, 5

FLORIDA

Excess Management Systems, Inc.	RE0249690
3143 Skyway Circle Melbourne, Florida 32934	
(321) 722-2856	Schedules 2, 3, 3N, 4, 5

Pharmaceutical Returns of America, Inc.	RA0341646
2140 Sunnydale Blvd., Suite F Clearwater, Florida 34625	
(727) 692-8610	Schedules 2, 3, 3N, 4, 5

PharmaLink, Inc.	RP0260581
12345 Starkey Road, Suite L Largo, Florida 33773	
(727) 669-8187	Schedules 2, 3, 3N, 4, 5

FLORIDA

Rx Reverse Distributors, Inc. 100B Industrial Park Boulevard Sebastian, Florida 32958	RR0328131
(772) 388-1212	Schedules 2, 3, 3N, 4, 5

Pharmacy Returns Logistics 27059 83rd Place P.O. Box 391 Branford, Florida 32008	RP0331669
(386) 935-0876	Schedules 2, 2N, 3, 3N, 4, 5

SAI Transport 3420 Youngs Ridge Road Lakeland, Florida 33810	RS0182763
(863) 858-7110	Schedules 2, 3, 3N, 4, 5

Stericycle, Inc. 3800 S. Congress Avenue, Suite 8 Boynton Beach, Florida 33426-8424	RS0323888
1-800-474-9090 or (561) 509-2050	Schedules 2, 3, 3N, 4, 5

GEORGIA

Maximum Rx Credit, Inc. 4765 Stone Mountain Highway, SW, Suite C Lilburn, Georgia 30047	RM0224749
(770) 985-2136	Schedules 2, 3, 3N, 4, 5

Return Logistics International Corporation 22 Artley Road Savannah, Georgia 31408	RE0215675
(912) 748-5100	Schedules 1, 2, 3, 3N, 4, 5

Strong Pharmaceutical Services 6264 Crooked Creek Road, Suite 11 Norcross, Georgia 30092	RS0239219
1-800-778-7664 or (770) 409-1500	Schedules 1, 2, 3, 3N, 4, 5

Universal Rx Solutions of Georgia 2084-900 Lake Industrial Court Conyers, Georgia 30013	RP0242569
1-800-777-6565 or (770) 785-9710	Schedules 1, 2, 3, 3N, 4, 5

ILLINOIS

Inventory Management Corp. 837 N. Lombard Street Elmhurst, Illinois 60126	RI0301743
(630) 941-1752	Schedules 2, 2N, 3, 3N, 4, 5

Pharma Logistics, Ltd. 1050 East High Street Mundelein, Illinois 60060	RP0225107
1-888-729-7427 or (847) 837-1224	Schedules 2, 3, 3N, 4, 5

Pharmaceutical Returns Services 110 Oak Street North Aurora, Illinois 60542-1109	RP0194174
1-800-215-5878 or (630) 892-8740	Schedules 2, 3, 3N, 4, 5

Progressive Returns, Inc. 6209 W. Grand Chicago, Illinois 60639	RP0215512
(773) 622-9584	Schedules 3, 3N, 4, 5

Stericycle, Inc. 28161 North Keith Drive Lake Forest, Illinois 60045	RS0311035
(847) 607-2008	Schedules 2, 3, 3N, 4, 5

INDIANA

Med-Turn, Inc. 17406 Tiller Court, Suite 1800 Westfield, Indiana 46074	RM0209165
1-800-488-5735	Schedules 2, 3, 3N, 4, 5

Stericycle, Inc. 2670 Executive Drive, Suite A Indianapolis, Indiana 46241	RS0331607
(317) 860-1200	Schedules 2, 3, 3N, 4, 5

IOWA

National Pharmaceutical Returns, Inc. 4164 NW Urbandale Drive Urbandale, Iowa 50322	RN0205408
1-800-470-7725 or (515) 252-7722	Schedules 1, 2, 2N, 3, 3N, 4, 5

MICHIGAN

Drug and Laboratory Disposal, Inc. 331 Broad Street Plainwell, Michigan 49080-1478	RD0284048
1-800-685-9824 or (269) 685-9824	Schedules 1, 2, 2N, 3, 3N, 4, 5

MINNESOTA

Pharmaceutical Returns 200 Division Street, Suite 170 Northfield, Minnesota 55057	RP0265593
1-800-440-0613	Schedules 2, 3, 3N, 4, 5

MISSOURI

Guaranteed Returns Midwest GRX Holding, LLC **dba Guaranteed Returns Midwest** 100 Teduke Court St. Charles, Missouri 63301	RE0303230
1-800-729-3279 or (636) 724-0044	Schedules 1, 2, 2N, 3, 3N, 4, 5

Logistical Resource Solutions, Inc. 1717 Olive, 4th Floor St. Louis, Missouri 63103	RL0341595
(314) 241-5771	Schedules 3, 3N, 4, 5

NEW JERSEY

USI of NJ, LP Munsonhurst Road Complex Franklin, New Jersey 07416	RB0248701
1-800-321-7388 or (770) 785-9710	Schedules 2, 3, 3N, 4, 5

NEW YORK

Devos, Ltd. **dba Guaranteed Returns** 100 Colin Drive Holbrook, New York 11741	RD0188311
1-800-473-2138 or (631) 689-0191	Schedules 2, 2N, 3, 3N, 4, 5

Reliable Rx Returns, Inc. 65 Knickerbocker Avenue, Suite C Bohemia, New York 11716	RR0240630
1-800-215-0727 or (631) 589-4249	Schedules 2, 3, 3N, 4, 5

NORTH CAROLINA

DCM Ventures, Ltd. **dba RxNet Services**	RD0337623
3012 South Elm – Eugene Street, Suite G Greensboro, North Carolina 27406	
(336) 273-5112	Schedules 2, 2N, 3, 3N, 4, 5

Pharmaceutical Dimensions	RP0308519
317 South Westgate Drive, Suite B Greensboro, North Carolina 27407	
(336) 297-4851	Schedules 2, 3, 3N, 4, 5

Universal Dynamic Returns Co.	RU0345339
4280 Piedmont Parkway, Suite 101 Greensboro, NC 27410	
(336) 510-4970	Schedules 3, 3N, 4, 5

PENNSYLVANIA

Chesapeake Waste Solutions, Inc.	RC0322595
229 Shellyland Road, Unit 5A Manheim, Pennsylvania 17545	
(717) 653-8882	Schedules 2, 3, 3N, 4, 5

TENNESSEE

Pharmaceutical Credit Corporation	RP0209456
130 Seaboard Lane, Suite A-6 Franklin, Tennessee 37067	
1-800-487-4308 or (615) 373-4262	Schedules 2, 3, 3N, 4, 5

Return Solutions, Inc.	RP0216223
10635 Dutchtown Road Knoxville, Tennessee 37932	
(865) 675-1355	Schedules 2, 3, 3N, 4, 5

TEXAS

Med-Turn, Inc.	RR0191902
4332 Empire Road Ft. Worth, Texas 76155	
1-800-967-5952 or (817) 868-5372	Schedules 2, 3, 3N, 4, 5

UTAH

Clean Harbor Aragonite, LLC 11600 North Aptus Road Aragonite, Utah 84029-1339	RC0331049
(801) 323-8138	Schedules 1, 2, 3, 3N, 4, 5

MD Returns P.O. Box 526056 1323 W. 7900 S., Suite #206 West Jordan, Utah 84088	RM0255807
(801) 562-2498	Schedules 2, 3, 3N, 4, 5

National Products Sales, Inc. Pharmaceutical Division 1600 Empire Road Salt Lake City, Utah 84104	RA0188006
(801) 972-4132	Schedules 2, 3, 3N, 4, 5

WASHINGTON

P.S. Industries, Inc. 1100 2nd Avenue, Suite B1 Seattle, Washington 98101-3425	RP0203618
(206) 749-0739	Schedules 2, 3, 3N, 4, 5

WISCONSIN

Capital Returns, Inc. 6101 N. 64th Street Milwaukee, Wisconsin 53218	RS0230778
1-800-950-5479 or (414) 967-2800	Schedules 2, 3, 3N, 4, 5

Veolia ES Technical Solutions, LLC W124 N9451 Boundary Road Menomonee Falls, Wisconsin 53051	RV0302389
(262) 255-6655	Schedules 2, 3, 3N, 4, 5

Walgreen Co. **dba Walgreens** 6464 Blanchars Crossing Windsor, Wisconsin 53598-9650	RW0340757
(847) 315-4412	Schedules 3, 3N, 4, 5

4. Materials for Public Outreach and Education

Public education materials can be useful to raise awareness about unwanted medicine disposal and promote action. These materials should present the issue in clear language geared toward the average consumer and propose alternative disposal methods that are both safe and convenient. Since senior citizens comprise a large proportion of the target audience, it may be advisable to consider large-print brochures. The following documents are examples of outreach materials that have been developed by local, state, and national programs regarding unwanted medicine disposal. Similar informational materials could be distributed at collection events, pharmacies, conferences, etc. You can adapt any of the materials here as models for your own outreach campaign.

MEDICINE COLLECTION DAY

a prescription for clean water & safe kids

For Milwaukee, Ozaukee, Racine and Washington Counties.
(Due to funding, residents may only visit the collection in your county)

April 19th, 2008

9:00 a.m. to 1:00 p.m.

NEVER FLUSH or pour unused medicine down the drain.
Bring it to a special "Medicine Collection Day."

- ***Help protect Lake Michigan***
- ***Prevent childhood poisonings***
- ***Reduce substance abuse***

You Can Bring: Prescription Medication & Over the Counter Medication. Ointments, sprays, inhalers, creams, vials and pet medications are acceptable.

Do NOT Bring: Illegal Drugs, Biohazardous Material, Needles/Sharps, Personal Care Products (shampoo, soaps, lotions, sunscreens, etc). Household Hazardous Waste (paint, pesticides, oil, gas)

WHY SHOULD WE CARE?

Wastewater treatment plants are not designed to remove all medicines from wastewater. Drugs can end up going through the plants and directly to our lakes and rivers. Various levels of antibiotics, anti-depressants, veterinary drugs, birth control hormones and other drugs have been detected in waterways across the United States.

Research suggests that hormones found in pharmaceuticals may cause abnormalities in the reproductive cycles of fish. Antibiotics in the environment may also contribute to the development of drug resistant germs.

NEXT PAGE

Click on your county for a map of the collection sites.

MILWAUKEE COUNTY RESIDENTS
Miller Park, Milwaukee WI
Miller lot by the "sausage haus"
printable .pdf of map

OZAUKEE COUNTY RESIDENTS
Port Washington
Ozaukee County Hwy. Dept.
410 S. Spring Street, Port Washington
link to map

Mequon
Milwaukee Area Technical College
5555 West Highland Road, Mequon
link to map

RACINE COUNTY RESIDENTS
City of Racine
6200 21st Street, Racine
link to map

City of Burlington
156 E. State St., Burlington
link to map

WASHINGTON COUNTY
Washington County Fair Park
3000 Pleasant Valley Rd, West Bend
link to map

10-80

HOW DOES THE COLLECTION WORK?

Please keep medication in the original package or bottle. You CAN cross off your name and address, but DO NOT cover up or remove the name of the medicine. Simply drive or walk through the drop off area and give your medicine to a pharmacist. They will sort the medication into one of two groups. Federal law requires that we immediately hand over certain drugs to law enforcement. Law enforcement will destroy all drugs it receives. Veolia Environmental Services will incinerate the rest of the medicine collected at a federally licensed incinerator.

WHAT SHOULD I DO WITH OLD MEDS IF I CAN'T GO TO THE COLLECTION?

If you CAN store it safely, keeping it out of the reach of kids, save it until the next "Medicine Collection Day." If you CAN'T store it safely and have to get rid of it, the federal government recommends throwing unused medicine in the garbage. ***It's not a perfect option.*** Most landfills collect liquid that seeps through the landfill and direct it to a sanitary sewer. Wastewater treatment plants are not designed to remove all medicines from wastewater. However, if you need to throw it away, grind it up and mix it with coffee grounds or something nasty that no one would want to eat. Or, dissolve it in a jar with water and kitty litter.

For More Information, Check Out These Links:

read the recent article from *Governing* Magazine
Sept. 2006 Issue

Prozac In the Water

- *U.S. Environmental Protection Agency*
- *Waste & Materials Management Program - WDNR*
- *Unwanted Meds*
- *U.S. Geological Society Research Article: Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999-2000: a national reconnaissance*
- *American Water Works Association*

For more information please visit
www.mmsd.com

PREV PAGE NEXT PAGE

mmsd
Preserving The Environment • Improving Water Quality

Aurora Pharmacy®

Columbia St. Mary's
A Passion for Patient Care

Police City of Milwaukee

Milwaukee Brewers

City of Milwaukee

Racine on the Lake

Ozaukee County

City of West Bend
SEWER UTILITY

Western Racine County Health Department

Village of Saukville

Caledonia/Mt. Pleasant Health Department
Mt. Pleasant

MATC

Washington County
Wisconsin

ADVERTISING MATERIAL

PLEASE feel free to print and cut out the postcard below. Place these printouts where you think people will take notice to help keep our water clean and our kids safe.

08-018

MEDICINE COLLECTION DAY

a prescription for clean water & safe kids

NEVER FLUSH or pour unused medicine down the drain.
Bring it to a special "Medicine Collection Day."

MILWAUKEE COUNTY

Miller Park, Milwaukee
Miller lot by the "sausage haus"

OZAUKEE COUNTY

Port Washington
Ozaukee County Hwy. Dept.
410 S. Spring Street,
Port Washington

Mequon
Milwaukee Area Technical College
5555 W. Highland Rd., Mequon

RACINE COUNTY

City of Racine
6200 21st Street, Racine

City of Burlington
156 E. State St., Burlington

WASHINGTON COUNTY

Washington Co. Fair Park
3000 Pleasant Valley Rd,
West Bend

April 19th, 2008
9:00 a.m. to 1:00 p.m.

- Help protect Lake Michigan
- Prevent childhood poisonings
- Reduce substance abuse

For more information
please visit **www.mmsd.com**

PREV PAGE

NO DRUGS DOWN THE DRAIN

UNUSED MEDICATIONS SHOULD BE

1. Taken to a household hazardous waste collection center or event (no controlled substances allowed) or

2. Put in a sturdy, securely sealed container, then in a trash can where children and animals can't reach them.

Unused prescription and over-the-counter medications that are put in drains or flushed down the toilet pollute the environment, so please take as prescribed and dispose of unused portions properly.

www.nodrugsdownthedrain.org

In case of overdose or accidental poisoning, call the poison center at 1-800-222-1222 24 hours/day

CALIFORNIA POISON CONTROL SYSTEM

california pharmacists association

NO TIRE MEDICAMENTOS EN EL DESAGÜE

LOS MEDICAMENTOS NO UTILIZADOS SE DEBEN

1

Llevar a un evento o centro para la recolección de desechos domesticos peligrosos (substancias controladas no serán permitidas), o

2

Poner dentro de un recipiente resistente, sellar y tirar a la basura fuera del alcance de niños y animales.

Todo medicamento recetado o no recetado que sea desechado en el desagüe, lavabo o excusado, contamina el medio ambiente. Tome sus medicamentos como recetados por su doctor, y favor de deshacerse de medicamentos no utilizados de la manera apropiada.

www.nodrugsdownthedrain.org

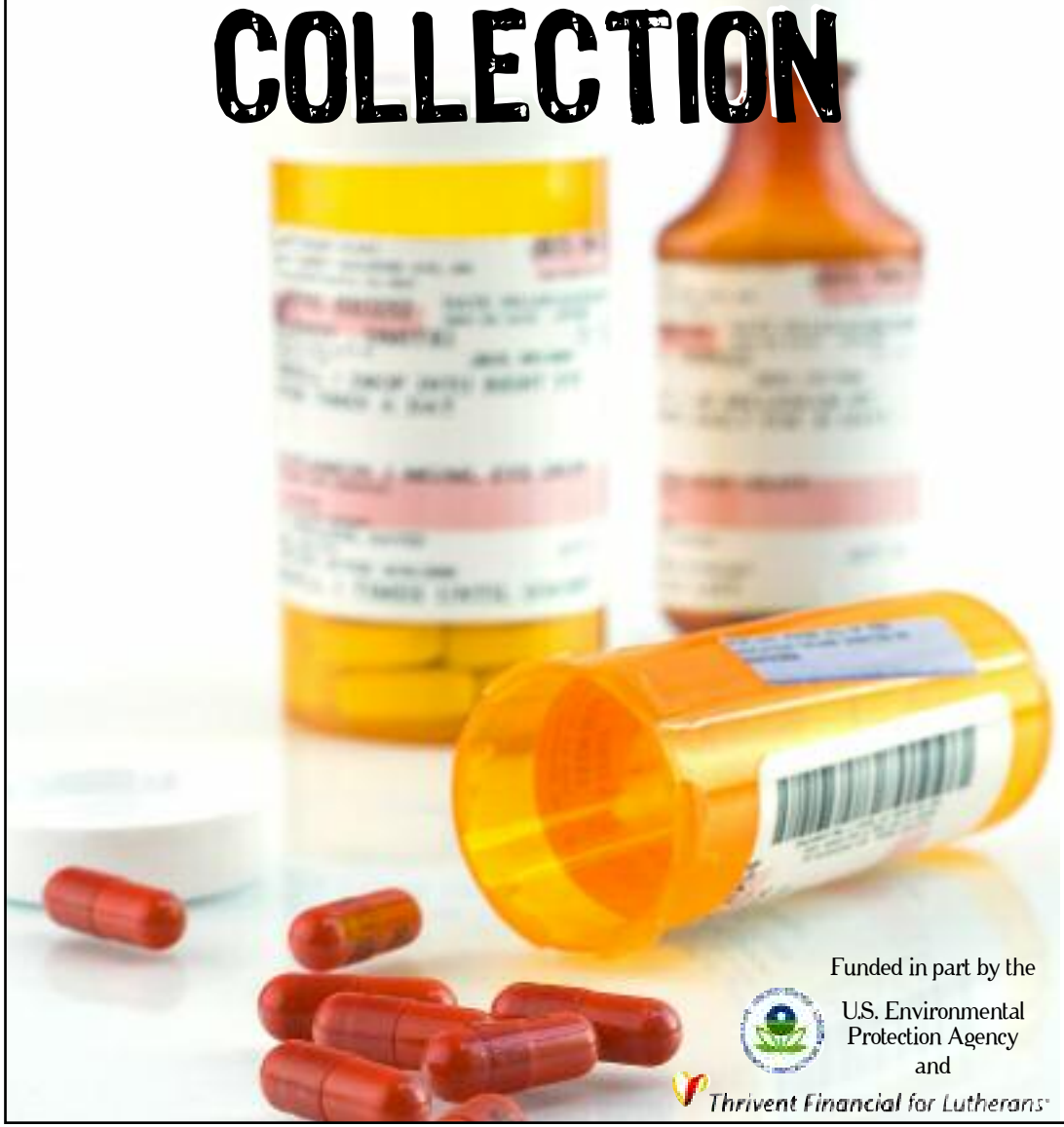
En caso de sobredosis o envenenamiento accidental, llame al centro de envenenamientos al 1-800-222-1222 las 24-horas

CALIFORNIA POISON CONTROL SYSTEM

california pharmacists association

Earth Keeper's

PHARMACEUTICAL COLLECTION



Funded in part by the
U.S. Environmental Protection Agency
and
Thrivent Financial for Lutherans

Saturday, April 21, 2007

9:00am - 12:00 noon

at participating Earth Keeper churches
across the Upper Peninsula

FREE AND OPEN TO THE PUBLIC

Do you have unwanted medications around your home? Help protect your family, community, and the environment by properly disposing of them.

- Bring in expired or unused prescriptions or over-the-counter medications
- Keep medications in original containers if possible

HELP KEEP OUR WATERS SAFE AND CLEAN

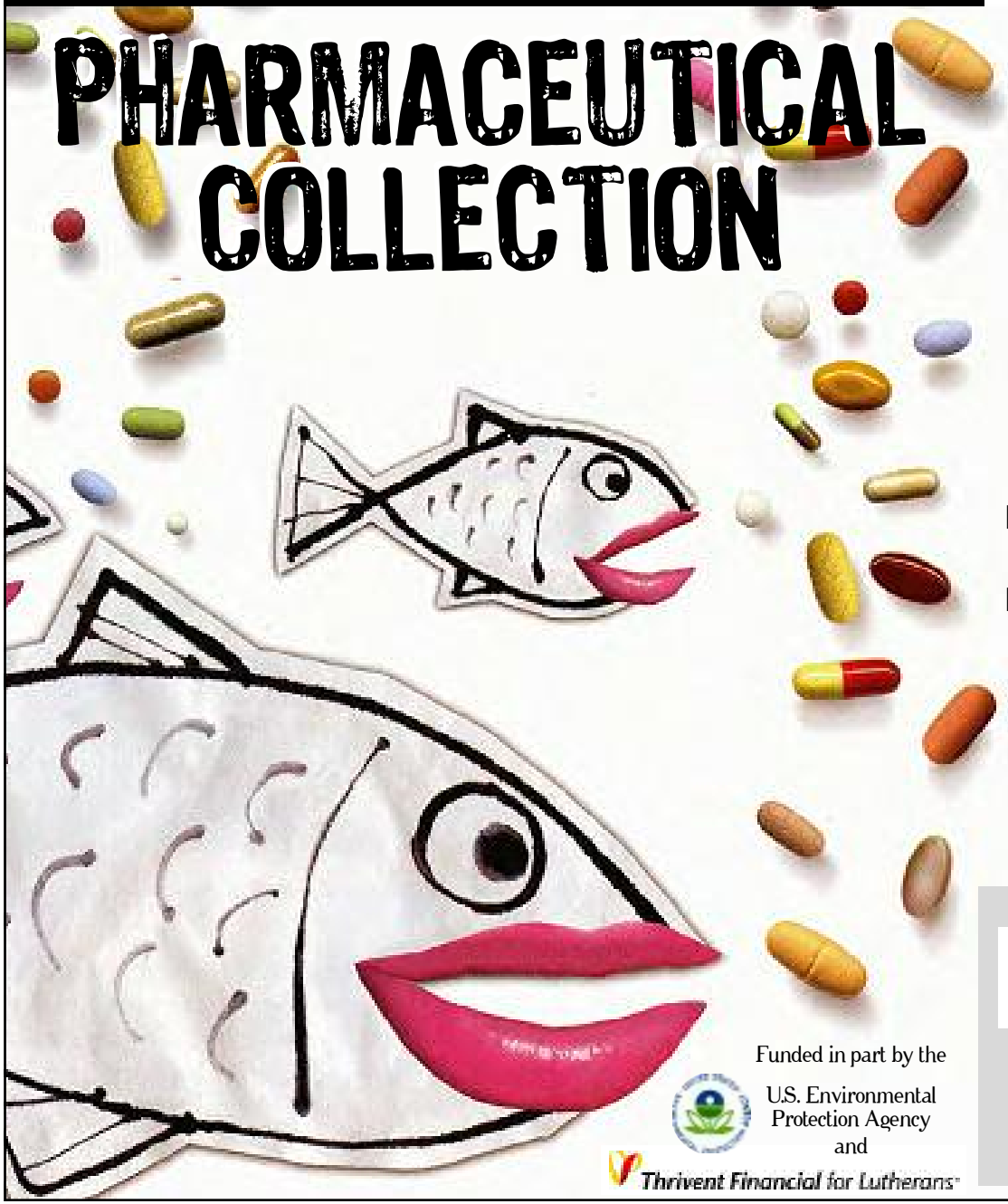
For a list of drop-off sites go to
www.superiorwatersheds.org

For more information contact
Superior Watershed Partnership
906-228-6095

SUPERIOR WATERSHED PARTNERSHIP

Earth Keeper's

PHARMACEUTICAL COLLECTION



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For a list of drop-off sites go to
www.superiorwatersheds.org

For more information contact
Superior Watershed Partnership
906-228-6095

SUPERIOR WATERSHED PARTNERSHIP

How to Dispose of Unwanted Medications

Expired or unwanted prescription and over-the-counter medications from households should never be disposed of by flushing them down the toilet or a drain. Although this method of disposal prevents accidental ingestion, it can cause contamination to Florida's aquatic environment because wastewater treatment systems are not designed to remove many of these medications.

Seven Steps to Safety

Please use these practical guidelines when disposing of prescription and over-the-counter medicines:

For Pills and Liquids:

1. Keep the medicines in the original container. This will help identify the contents if they are accidentally ingested.
2. Mark out your name and prescription number for safety.
3. For pills: add some water or soda to start dissolving them
   For liquids: add something inedible like cat litter, dirt or cayenne pepper.
4. Close the lid and secure with duct or packing tape.
5. Place the bottle(s) inside an opaque (non see-through) container like a coffee can or plastic laundry bottle.
6. Tape that container closed.
7. Hide the container in the trash. Do not put in the recycle bin.

Don't Flush That Leftover Medicine

Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, Florida 32399
850.245.8707
www.dep.state.fl.us

SWANCC's Disposal Program

This program is for residents that live in one of SWANCC's 23 member communities. No prescription drugs or sharps from businesses, schools or hospitals will be accepted. ID's will be checked for verification of residency.

General tips:

- Prescription drugs that are more than a year old should be disposed of properly.
- Turn in non-prescription medicines without an expiration date that are more than six months old.
- Keep pharmaceuticals in their original containers with labels to identify contents.
- All sharps need to be placed in a rigid container with a sealed lid. Put the container in a zipped plastic bag prior to dropping off. A new sharps container will be provided.

Acceptable Items:

Unused prescription medications
Expired prescription medications
Prescription cough syrup
Prescription eye drops
Expired over-the-counter medications
Residential sharps (needles/syringes)

Unacceptable Items:

Institutional or business waste
Non-prescription liquids
Latex gloves
Household Chemical Waste

For Your Information

Dangers of medicine in the water system

Recent research conducted by the U.S. Environmental Protection Agency and the U.S. Geological Survey found substantial amounts of antibiotics and steroidal hormones in rivers, lakes and wells from samples analyzed in 36 states. For more information, visit **www.epa.gov/nerlesd1/chemistry/pharma**.

Dangers of needles in trash

According to the US Environmental Protection Agency, each year, 8 million people use more than 3 billion needles, syringes, and lancets, also called sharps, to manage medical conditions at home. Some sharps users throw their used needles in the trash or flush them down the toilet. Used sharps left loose among other waste can hurt sanitation workers during collection rounds, at sorting and recycling facilities and at landfills, or become lodged in equipment, forcing worker to remove them by hand.

Children, adults and even pets are also at risk for needle-stick injuries when sharps are disposed improperly at home or in public settings. For more information, visit **www.epa.gov/osw**.

Personal Sharps Containers

Any resident that lives in a SWANCC-member community and administers home-injections is eligible to receive a 1 quart sharps container. They need to go to the designated prescription drug drop-off site in their community to request one.

For sources of facts and information, visit **www.swancc.org**.

SWANCC Communities

- Arlington Heights
- Barrington
- Buffalo Grove
- Elk Grove Village
- Evanston
- Glencoe
- Glenview
- Hoffman Estates
- Inverness
- Kenilworth
- Lincolnwood
- Morton Grove
- Mount Prospect
- Niles
- Palatine
- Park Ridge
- Prospect Heights
- Rolling Meadows
- Skokie
- South Barrington
- Wheeling
- Wilmette
- Winnetka

WHAT IS IN YOUR MEDICINE CABINET?

Peter's ulcer — 2000

Tobin's ear infection — 2001

Miranda's strep throat — 2002

Helen's arthritis — 2003

Danny's diabetes — 2004

Darryl's migraines — 2005

2006

SWANCC

SWANCC is providing a new disposal program for prescription drug waste called the *Prescription Drug/ Sharps Disposal Program*.

- Ensure environmental safety
- Guard against potential theft associated with disposing of old medications
- For residentially-generated unused prescriptions, expired over-the-counter drugs, and needles known as “sharps”
- No commercial or institutional waste will be accepted

Visit **www.swancc.org,** email info@swancc.org or call SWANCC at (847) 724-9205 for participating disposal locations.

For information on recycling, special collection events or waste reduction resources such as:

“Alternative Cleaning Methods” Guide

Athletic Shoe Recycling

“Closing the Loop” Brochure

Computer and Electronics Recycling

Document Destruction Events

Eco-Friendly Fashion Show

Eco-Friendly Marketplace

Glenview Transfer Station

“Green Pages” Guide

Household Chemical Waste Collections

Presentations and Workshops

Recycling Drop-off Centers

“Recycling Etc.” Community Newsletter

“Recycling Rangers” Program

Roll-off Rentals

SWANCC Resource Materials

“Waste Reduction Tips” Brochure

Check out SWANCC’s website at **www.swancc.org**, contact SWANCC at **info@swancc.org** or call (847) 724-9205.

SOLID WASTE AGENCY OF NORTHERN COOK COUNTY

www.swancc.org

Printed on recycled paper.

SWANCC Prescription Drug and Sharps Disposal Program

These bottles will not age well.

Solid Waste Agency of Northern Cook County
(847) 724-9205 **www.swancc.org**

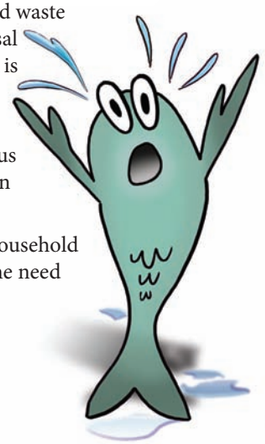
Guidelines to Follow

Keep all medications (liquids and solids) out of the water supply. Do not dispose of unwanted medications by pouring them down a drain or flushing them down a toilet. Many medications cannot be removed by wastewater treatment plants. Some of them even damage the treatment system.

- Contact your local Indiana solid waste management district for disposal guidance. Contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- If your solid waste management district does not provide collection of medications, follow these steps for disposal in your regular trash:
  - Dissolve tablets or capsules in the original container with a small amount of water. For liquid medications, add sawdust, kitty litter or flour to the original container;
  - Remove labels from prescription bottles or completely mark out all patient information;
  - Put all lids back on the containers tightly and put them in a heavy-duty sealed bag. Tight lids and sealed bags will help keep the medications from leaking out; and
  - Put the sealed bag in your trash so that it is not visible from outside the trash bag to discourage unintended use.

Properly manage all household chemicals. Household products that contain hazardous substances become household hazardous waste (HHW) once the consumer no longer has a use for it and disposes of it.

- When in doubt, don't pour it out. Contact your local Indiana solid waste management district for disposal guidance. Contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- Refer to the household hazardous waste disposal chart contained in this document.
- Purchase only the amount of household chemicals necessary to avoid the need for disposal.



Safe Disposal Guide

This symbol represents products that can be safely poured down the drain with plenty of water. (Homeowners using septic tanks should consider alternate disposal and try to purchase these items sparingly.)

This symbol represents products that can be disposed of in the garbage.

This symbol indicates you should contact your local household hazardous waste (HHW) program for proper disposal instructions.

Household Hazardous Waste Disposal Chart

Bathroom

Alcohol-based lotions	
Bathroom cleaners	
Disinfectants	
Permanent lotions	
Hair relaxers	
Medicine	
Nail polish	
Nail polish remover	
Thermometers (with mercury)	
Toilet bowl cleaner	
Tub and tile cleaner	

Garage/Workshop

Antifreeze	
Auto body filler	
Batteries, auto	
Brake fluid	
Car wax with solvent	
Diesel fuel	
Fuel oil	
Gasoline	
Glue (solvent based)	
Glue (water based)	
Kerosene	
Metal polish with solvent	
Mineral spirits	
Motor oil	
Paint–latex, dried hard	
Paint–latex, still liquid	
Paint–oil based	
Paint–auto	
Paint brush cleaner w/solvent	
*Paint brush cleaner w/TSP**	
Paint thinner	
Paint stripper	
Primer	
Rust remover	
Switches (potentially containing mercury)	
Transmission fluid	
Turpentine	

*Trisodium phosphate

Garage/Workshop

Varnish	
Windshield washer solution	
Wood preservative	

Garden

Fungicide	
Herbicide	
Insecticide	
Pesticide	
Rat, mouse, gopher poison	
Weed killer	

Here/There

Ammunition	(Take to police or fire station)
Batteries, alkaline	
Batteries, mercury-containing	
Batteries, rechargeable	
Dry cleaning solvents	
Fiberglass epoxy	
Gun cleaning solvents	
Lighter fluid	
Moth balls	
Photographic chemicals	
Septic tank degreasers	
Shoe polish	
Smoke alarms	(Return to manufacturer)
Swimming pool chemicals	
Thermostats (mercury ampule inside)	

Kitchen

Aerosol cans–empty	
Aerosol cans–full	
Ammonia-based cleaners	
Drain cleaners	
Fats, oils and grease	
Floor care products	
Furniture polish	
Metal polish	
Oven cleaner	

Use Your Brain Before Pouring Anything Down the Drain

For more information:

Indiana Department of Environmental Management
Office of Pollution Prevention and Technical Assistance

(800) 988-7901
www.useyourbrain.IN.gov

100 North Senate Avenue • MC 64-00 IGCS W041
Indianapolis, IN 46204-2251

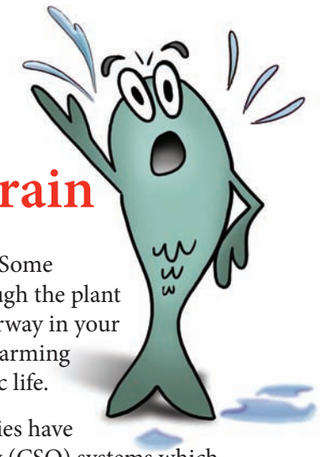
Indiana Department of Environmental Management

08/08

Back Cover

Front Cover

Use Your Brain Before Pouring Anything Down the Drain



If you live in a city or town, chances are everything you pour down the drain ends up at the local wastewater treatment plant (WWTP). So, before you flush, pour or dump anything into a toilet, sink or household drain, think about what it might do to your WWTP and your environment.

Your local wastewater treatment plant is designed to treat human wastes and dirty water from household activities such as bathing, showering, laundry, and dishwashing. Once treated, the clean water is safely released to a river, lake, or stream in your community. When other items – including household chemicals – are sent to the WWTP, they can harm the treatment process and increase the overall cost of wastewater treatment. Some chemicals may pass through the plant and be released to a waterway in your community, potentially harming human health and aquatic life.

Some Indiana communities have combined sewer overflow (CSO) systems which convey both wastewater and storm water to the wastewater treatment plant through a single pipe. During periods of heavy rain, CSOs may release untreated wastewater directly into your local rivers, lakes and streams. This is an even greater threat to human health and the environment.

Guidelines to Follow

Keep mercury out of the sink.

Fever thermometers are the most common household items that contain mercury.

- Search your home for items containing mercury, and tag them properly.
- Contact your local Indiana solid waste management district for disposal guidance; contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- Properly manage a mercury spill.
  - Do **not** vacuum mercury;
  - Do **not** rinse it down the sink;
  - Do follow the mercury spill guidance at www.IN.gov/idem/ctap/mercury/spill.pdf;
  - Call IDEM at (800) 988-7901.

Collect fats, oils and grease from food products.

- Store in plastic or glass jars with screw on lids.
- Dispose of collected items with your trash.
- For large quantities, contact your local Indiana solid waste management district for disposal guidance, contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.

Panel 1

Panel 2

So how do we dispose of medications we no longer need? Our choices have been to leave them in the medicine cabinet, flush them, or throw them in the trash. There are problems with all of these options.

If kept in the cabinet: Keeping old medication in the house can lead to accidents. People may get confused about which drugs to take, or take expired, ineffective medicine. Young children can find medicine, which could lead to poisoning. Unneeded drugs kept at home can also tempt intentional abuse.

If flushed: Disposing of medication this way causes harm to the environment. Sewage treatment plants in use today are not designed to remove all drugs from treated water.

Drugs kill beneficial bacteria responsible for breaking down waste at sewage treatment plants. Flushed medicine also can damage septic systems.

If thrown in the trash: Drugs thrown in the trash can wind up in the hands of small children, be consumed by animals, or wind up in the hands of illicit drug users. Identity theft can occur if personal information is left on the medicine bottles when discarded. Drugs can eventually leach into the landfill and wind up in our groundwater.

So what can we do? Now, you can drop off your outdated or unwanted medications at Southwest General's Protection Services Office seven days a week. The drugs will then be safely processed, according to Ohio law, by a professional medical waste handler through a variety of means that ensure safe disposal.

What can you bring in for disposal?

The hospital will accept non-prescription over-the-counter medications (OTC), prescription medications and even pet medications. You can bring in pills, liquids, ointments and lotions. You can leave the medication in its original packaging or put it in a sealable plastic bag. You can even combine medications in one bag. If you bring in a liquid medication, please put the bottle in a sealable plastic bag to avoid leakage.

What can't you bring in for disposal?

There are several categories of prescription drugs that cannot be accepted for disposal at this time. These are controlled substances including drugs such as amphetamines, narcotics, codeine and Attention Deficit/Hyperactivity Disorder (ADHD) treatments. If you are not sure whether your medication falls into this category, please contact your pharmacy.

The health center also cannot accept used syringes, asthma inhalers or drugs in aerosol canisters or chemotherapy drugs, either IV liquids or oral medications.

For these types of drugs, do not buy more than you can use before the expiration date. If you need to dispose of either controlled substances or chemotherapy drugs, call your pharmacist for assistance. Some pharmacies are willing to accept these drugs for disposal.

Collection location and hours

You can drop off medications at the Protection Services Office at Southwest General Health Center between the hours of 7 a.m. and 8 p.m. every day. The office is located at the south end of the hospital. You can use the door at the south parking lot,

next to the parking garage. There is plenty of free parking available. See the map on the other side of this brochure for reference.

Once you go through the double doors, the Protection Services Office is the first door on the right. There are no forms to fill out, so you can maintain your privacy.

If you can't get to the health center yourself, you can give the medication to a friend, family member, or other caregiver to bring in for you. No I.D. or signatures are required. Just remember that we can't accept controlled substances, used syringes, aerosol canisters or chemotherapy drugs.

If you can't find a way to bring your medication in, please call Southwest General's Health Connection at 440-816-5050. This health information and referral service will arrange for a pick-up.

An ongoing commitment to the community

The Medication Disposal Program is an ongoing commitment by Southwest General Health Center to recycling programs and environmental stewardship.

Please help

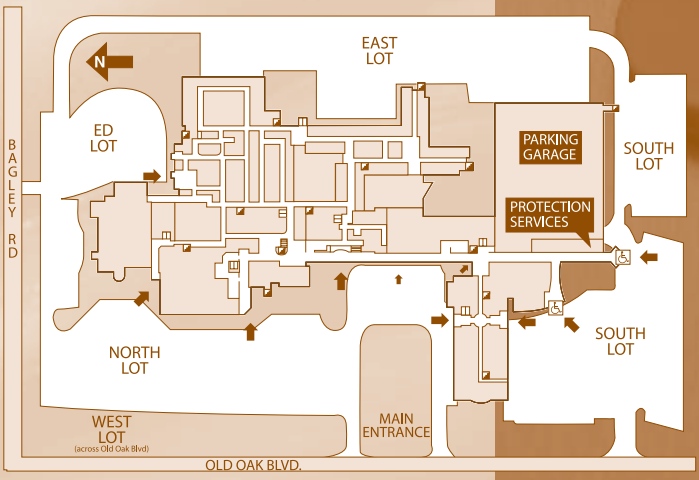
With your help, we can keep pharmaceuticals out of the reach of our children and avoid polluting our environment. We appreciate your participation in this program. Thank you for your dedication to the health and safety of our community.

For more information *please call Southwest General Health Center's Health Connection at 440-816-5050 or visit* www.olmstedfalls.org *or* www.swgeneral.com.

Medication disposal is quickly becoming an important issue. As a society, we're taking more medications than ever before. As the population ages, those numbers will only increase. Just take a look at the choices you have for a simple over-the-counter cold medication– it is mind boggling!

Southwest General
Health Center's
Medication Disposal Program
is just one more way ...

Great Care Happens Here



SOUTHWEST GENERAL HEALTH CENTER

Partnering with
UniversityHospitals HealthSystem

Medication Disposal Program
18697 Bagley Road
Middleburg Heights, OH 44130
440-816-5050
www.swgeneral.com

5/06

Southwest General Health Center
and the City of Olmsted Falls

Medication Disposal Program

Not sure what to do with expired or unwanted medications?

Southwest General Health Center, in partnership with the City of Olmsted Falls, can help!

Great Care Happens Here

SOUTHWEST GENERAL HEALTH CENTER
Partnering with
UniversityHospitals HealthSystem
www.swgeneral.com

What's the Issue?

Safe methods of disposal are needed for expired or unwanted medicines. Products of concern include prescription and over-the-counter medications. Improper disposal of medicines presents both a public safety and environmental hazard and wastes millions of health care dollars annually.[1]

Why is Medicine Disposal a Concern?

The three main hazards are:

1. Possible poisoning from accidental ingestion, particularly among young children and pets, if medicines are thrown in the trash.

2. Illegal use or theft, including identity theft, from discarded containers providing personal patient information.

3. Contamination of water resources, which can result in reproductive and developmental problems in fish and other aquatic wildlife if medicines are flushed or placed in the trash.

[1] Daughton, C. (2003). "Cradle to Cradle Stewardship of Drugs for Minimizing Their Environmental Disposition While Promoting Human Health—Rationale for and Avenues Toward a Green Pharmacy". Environmental Health Perspectives. 111 (5): 757-774.

Other Resources

- *Disposal of Unwanted Medicines* resource kit from IL-IN Sea Grant
  www.iisgcp.org/unwantedmeds
- U.S. Environmental Protection Agency the potential environmental impacts of pharmaceuticals:
  www.epa.gov/ppcp
- U.S. Geological Survey research on the presence of pharmaceuticals in the environment:
  http://toxics.usgs.gov/regional/emc/

Additional Contacts:

- Susan Boehme
  Illinois-Indiana Sea Grant Program
  (312) 353-4383
  boehme.susan@epa.gov

Unused and Expired Medicines

How to reduce pollution and prevent poisoning

Sea Grant
ILLINOIS - INDIANA

www.iisgcp.org/unwantedmeds

How do Pharmaceuticals Enter the Environment?

Pharmaceuticals have been found primarily in discharge from wastewater treatment plants and surface waters. Pharmaceuticals are also released into waterways via runoff from commercial animal feeding operations and aquaculture, and from fields where manure and biosolids have been applied.

How Can Medications Impact the Environment?

Expired or unwanted medicines, if flushed down the toilet or drain, are a source of pollution in wastewater. Because sewage treatment plants are not designed to deal with drugs, these chemicals can be released into streams, lakes, and groundwater and affect fish and other aquatic wildlife.

You might imagine that any substance safe enough for humans and pets to ingest as medication can't cause environmental harm. But that may not be the case. If our medicines are reaching streams, rivers, and lakes, organisms living in these habitats may be *continuously* exposed to these drugs. Some aquatic organisms living in waters downstream from wastewater treatment plants are showing signs of developmental and reproductive problems. Researchers are working to determine whether pharmaceuticals are causing these effects.

Disposal Dos and Don'ts

Do:

1. Return unwanted/expired medicines to pharmacies and other locations participating in take-back programs.
2. Take to household hazardous waste collection sites, if permitted in your state.
3. Ask your physician and pharmacist for advice on how to dispose of your unwanted or expired medicines.
4. Check your state's guidelines on medicine disposal.

Do Not:

1. Flush down the sink or drain.
2. Place in the trash.
3. Give or sell to others.

How Can I Reduce the Quantity of Unwanted Medications in my Home?

1. Purchase only as much as you need and take the medication as prescribed by your physician.
2. Centralize all medications in one location secured from children and pets. This may help to limit inadvertent over-purchasing of products you already have.
3. In order to preserve the quality of your medicines, store medications at proper temperature and humidity as recommended on the label. This is sometimes NOT in the bathroom medicine cabinet.
4. Say "No" to physician samples if you are not going to use them.

What's the Issue?

Safe methods of disposal are needed for expired or unwanted medicines. Products of concern include prescription and over-the-counter medications. Improper disposal of medicines presents both a public safety and environmental hazard and wastes millions of health care dollars annually.[1]

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Other Resources

- Information Kit from IL-IN Sea Grant
  Contact Susan Boehme
  Illinois-Indiana Sea Grant Program
  (312) 353-4383
  boehme.susan@epa.gov
- U.S. Environmental Protection Agency website on the potential environmental impacts of pharmaceuticals:
  www.epa.gov/nerlesd1/chemistry/pharma
- U.S. Geological Survey (USGS) provides research on the presence of pharmaceuticals in the environment:
  http://toxics.usgs.gov/regional/emc

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4. Say "No" to physician samples if you are not going to use them.

Unused and Expired Medicines

How to reduce pollution and prevent poisoning

Drop-off Location

Yorkville Police Department at
804 Game Farm Road, Yorkville
8:00 a.m. to 5:00 p.m.
Monday – Friday

Printed on 30% post-consumer recycled paper

Kendall County Disposal of Unwanted Medications

All unwanted medications can be dropped off for safe disposal at the Yorkville Police Department at 804 Game Farm Road, 8:00 a.m. to 5:00 p.m. Monday through Friday.

Acceptable Medications – Residents may bring in pills, salves, and liquid medicines in original containers; pills in separate bags and liquid or salves in non-leaking containers. Labels on medications are not required.

Unacceptable Medications – Do not bring sharps, needles, IV bags, or thermometers. We cannot accept medications brought from nursing homes, clinics, doctor's offices or other businesses that distribute medications.

Individuals who obtained medications for personal use from a clinic, doctor, or nursing home can dispose of these medications at Yorkville Police Department.

For General Information contact:
Officer Barry Groesch YPD
Community Programs Director
630-553-4340 (non-emergency)

How do Pharmaceuticals Enter the Environment?

Pharmaceuticals have been found primarily in discharge from wastewater treatment plants and surface waters. Pharmaceuticals are also released into waterways via runoff from commercial animal feeding operations and aquaculture, and from fields where manure and biosolids have been applied.

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You might imagine that any substance safe enough for humans and pets to ingest as medication wouldn't harm the environment. But that may not be the case. If our medicines are reaching streams, rivers, and lakes, organisms living in these habitats may be *continuously* exposed to these drugs. Some aquatic organisms living in waters downstream from wastewater treatments plants are showing signs of developmental and reproductive problems. Researchers are working to determine whether pharmaceuticals are causing these effects.

Do Not:

1. Flush medications down the sink or drain.
2. Place in the trash.
3. Give or sell to others.

Sponsors

Sea Grant
Illinois - Indiana

Yorkville

Bristol Sanitary District

Kendall County TRIAD

Yorkville Police Department

Kendall County Health Department

Kendall County State's Attorney

OSCO Drug

Illinois Environmental Protection Agency

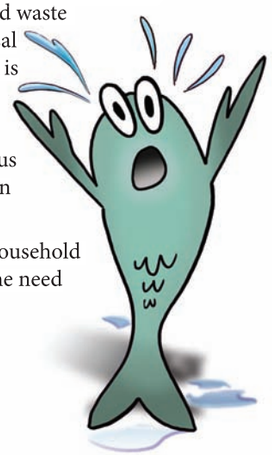
Guidelines to Follow

Keep all medications (liquids and solids) out of the water supply. Do not dispose of unwanted medications by pouring them down a drain or flushing them down a toilet. Many medications cannot be removed by wastewater treatment plants. Some of them even damage the treatment system.

- Contact your local Indiana solid waste management district for disposal guidance. Contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- If your solid waste management district does not provide collection of medications, follow these steps for disposal in your regular trash:
  - Dissolve tablets or capsules in the original container with a small amount of water. For liquid medications, add sawdust, kitty litter or flour to the original container;
  - Remove labels from prescription bottles or completely mark out all patient information;
  - Put all lids back on the containers tightly and put them in a heavy-duty sealed bag. Tight lids and sealed bags will help keep the medications from leaking out; and
  - Put the sealed bag in your trash so that it is not visible from outside the trash bag to discourage unintended use.

Properly manage all household chemicals.
Household products that contain hazardous substances become household hazardous waste (HHW) once the consumer no longer has a use for it and disposes of it.

- When in doubt, don't pour it out. Contact your local Indiana solid waste management district for disposal guidance. Contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- Refer to the household hazardous waste disposal chart contained in this document.
- Purchase only the amount of household chemicals necessary to avoid the need for disposal.



Safe Disposal Guide

This symbol represents products that can be safely poured down the drain with plenty of water. (Homeowners using septic tanks should consider alternate disposal and try to purchase these items sparingly.)

This symbol represents products that can be disposed of in the garbage.

This symbol indicates you should contact your local household hazardous waste (HHW) program for proper disposal instructions.

Household Hazardous Waste Disposal Chart

Bathroom

- *Alcohol-based lotions*
- *Bathroom cleaners*
- *Disinfectants*
- *Permanent lotions*
- *Hair relaxers*
- *Medicine*
- *Nail polish*
- *Nail polish remover*
- *Thermometers (with mercury)*
- *Toilet bowl cleaner*
- *Tub and tile cleaner*

Garage/Workshop

- *Antifreeze*
- *Auto body filler*
- *Batteries, auto*
- *Brake fluid*
- *Car wax with solvent*
- *Diesel fuel*
- *Fuel oil*
- *Gasoline*
- *Glue (solvent based)*
- *Glue (water based)*
- *Kerosene*
- *Metal polish with solvent*
- *Mineral spirits*
- *Motor oil*
- *Paint–latex, dried hard*
- *Paint–latex, still liquid*
- *Paint–oil based*
- *Paint–auto*
- *Paint brush cleaner w/solvent*
- *Paint brush cleaner w/TSP**
- *Paint thinner*
- *Paint stripper*
- *Primer*
- *Rust remover*
- *Switches (potentially containing mercury)*
- *Transmission fluid*
- *Turpentine*

**Trisodium phosphate*

Garage/Workshop

- *Varnish*
- *Windshield washer solution*
- *Wood preservative*

Garden

- *Fungicide*
- *Herbicide*
- *Insecticide*
- *Pesticide*
- *Rat, mouse, gopher poison*
- *Weed killer*

Here/There

- *Ammunition* (Take to police or fire station)
- *Batteries, alkaline*
- *Batteries, mercury-containing*
- *Batteries, rechargeable*
- *Dry cleaning solvents*
- *Fiberglass epoxy*
- *Gun cleaning solvents*
- *Lighter fluid*
- *Moth balls*
- *Photographic chemicals*
- *Septic tank degreasers*
- *Shoe polish*
- *Smoke alarms* (Return to manufacturer)
- *Swimming pool chemicals*
- *Thermostats (mercury ampule inside)*

Kitchen

- *Aerosol cans–empty*
- *Aerosol cans–full*
- *Ammonia-based cleaners*
- *Drain cleaners*
- *Fats, oils and grease*
- *Floor care products*
- *Furniture polish*
- *Metal polish*
- *Oven cleaner*

Use Your Brain Before Pouring Anything Down the Drain

For more information:

Indiana Department of Environmental Management
Office of Pollution Prevention and Technical Assisstance

(800) 988-7901

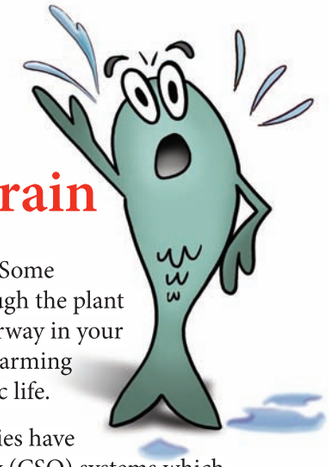
www.useyourbrain.IN.gov

100 North Senate Avenue • MC 64-00 IGCS W041
Indianapolis, IN 46204-2251

Indiana Department of Environmental Management

P2-573-BE ♻ Printed on recycled paper including post consumer fiber. 09/05

Use Your Brain Before Pouring Anything Down the Drain



If you live in a city or town, chances are everything you pour down the drain ends up at the local wastewater treatment plant (WWTP). So, before you flush, pour or dump anything into a toilet, sink or household drain, think about what it might do to your WWTP and your environment.

Your local wastewater treatment plant is designed to treat human wastes and dirty water from household activities such as bathing, showering, laundry, and dishwashing. Once treated, the clean water is safely released to a river, lake, or stream in your community. When other items – including household chemicals – are sent to the WWTP, they can harm the treatment process and increase the overall cost of wastewater treatment. Some chemicals may pass through the plant and be released to a waterway in your community, potentially harming human health and aquatic life.

Some Indiana communities have combined sewer overflow (CSO) systems which convey both wastewater and storm water to the wastewater treatment plant through a single pipe. During periods of heavy rain, CSOs may release untreated wastewater directly into your local rivers, lakes and streams. This is an even greater threat to human health and the environment.

Guidelines to Follow

Keep mercury out of the sink.

Fever thermometers are the most common household items that contain mercury.

- Search your home for items containing mercury, and tag them properly.
- Contact your local Indiana solid waste management district for disposal guidance; contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.
- Properly manage a mercury spill.
  - ▶Do **not** vacuum mercury;
  - ▶Do **not** rinse it down the sink;
  - ▶Do follow the mercury spill guidance at www.IN.gov/idem/ctap/mercury/spill.pdf;
  - ▶Call IDEM at (800) 988-7901.

Collect fats, oils and grease from food products.

- Store in plastic or glass jars with screw on lids.
- Dispose of collected items with your trash.
- For large quantities, contact your local Indiana solid waste management district for disposal guidance, contact information is available at www.IN.gov/idem/oppta/recycling/swmd/.

AARP Indiana

The power to make it better.™

AARP INDIANA MEMBERS IN WABASH COUNTY ARE CALLED TO ACTION

Ever wonder how to dispose of leftover medications? Do you have old prescriptions around the house? Do you need to clean out that medicine cabinet?

On the following dates in September, 2003, join other AARP members and interested citizens in disposing of expired and unused prescription and non-prescription drugs!

Bring them to one of the following six locations in Wabash County:

September 27th, 9a.m. to 12 p.m.

- **North Manchester Public Safety Building (709 W Main St)**
- **Wabash Co. Solid Waste office (1101 Manchester Ave, formerly REMC)**
- **LaFontaine Fire Department (6 W Branson)**

September 22nd-26th, Anytime

- **Wabash Police Station**
- **Wabash Co. Sheriff's Department**
- **North Manchester Police Department**
- **LaFontaine Town Hall**

AARP volunteers will be there to take your containers. Complete privacy is guaranteed – no identification of person or substance is necessary. A thank you gift for your participation will be given to you from AARP.

Why Should I Do This?

- Unused drugs can be an accidental health threat.
- They can contaminate the environment if they get into drinking and ground water.
- Some may kill bacteria in sewage treatment plants and septic systems if flushed down the drain and may produce resistant bacteria.
- Burning can release toxic pollutants into the air.
- They can be scavenged from trash receptacles and illegally sold.

Join your concerned friends and community in eliminating this hazard. All pharmaceuticals are disposed of as a hazardous poison in a very high-temperature incinerator.

YOUR Participation Can Make a Difference!

Stop! Don't Flush!

Eliminate Expired Drugs Environmentally

WHY? Flushing or trashing expired drugs can contaminate the environment, hazard human health, pollute our drinking and ground water, and jeopardize aquatic creatures.

WHAT? Supervised collection of prescription and non-prescription drugs for safe disposal

WHERE?

If you are homebound and cannot deliver your old or unused drugs to these locations, call your local law enforcement for home pick-up!

September 27th
9:00 a.m. until 12:00 p.m.

North Manchester
Public Safety Building

Wabash Co. Solid Waste office
on Manchester Ave
(former REMC)

LaFontaine Fire Department

September 22nd-26th
Anytime

Wabash Police Station

Wabash Co. Sheriff's Department

North Manchester Police
Department

LaFontaine Town Hall

WHO? AARP Indiana, Wabash County AARP Chapter 2866, City of Wabash, Community Services of North Manchester, Family Physicians of North Manchester, North Manchester Police Dept, Town of LaFontaine, Wabash County Commissioners, Wabash County Council on Aging, Wabash County Hospital, Wabash County Sheriff's Dept, Wabash County Solid Waste District, Wabash Police Dept

Wabash County
Solid Waste Management District

1101 Manchester Avenue, Wabash, IN 46992
PH: (260) 563-7649 FAX: (260) 563-4728
E-mail: recycle.wabashcounty@verizon.net Web: http://www.slashthetrash.com

PROCLAMATION

WHEREAS, The Wabash County Solid Waste Management District hosts annual events to collect and safely dispose of hazardous material, including expired pharmaceuticals; and

WHEREAS, Pharmaceuticals should not be thrown in the trash, flushed down the drain, or burned in the open; and

WHEREAS, Pharmaceuticals can be an accidental health threat, contaminate the environment, damage sewage treatment plants or septic systems, or be scavenged from trash receptacles; and

WHEREAS, The Wabash County Solid Waste Management District is partnering with Wabash County Commissioners, Wabash County Sheriff's Dept., AARP Indiana, Wabash County AARP Chapter 2866, City of Wabash, Community Services of North Manchester, Family Physicians of North Manchester, North Manchester Police Dept., Town of LaFontaine, Wabash County Council on Aging, Wabash County Hospital, and Wabash Police Dept.

Now, Therefore, We, the Wabash County Board of Commissioners, do hereby proclaim the last full week of September as

Eliminate Expired Drugs Environmentally Week

PROCLAIMED THIS _____ DAY OF _____, 2003
THE WABASH COUNTY BOARD OF COMMISSIONERS

_____	_____	_____
Lester Templin	Brian Haupert	Darle Dawes

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

The Michigan Department of Environmental Quality (MDEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Questions or concerns should be directed to the Office of Personnel Services, PO Box 30473, Lansing, MI 48909.

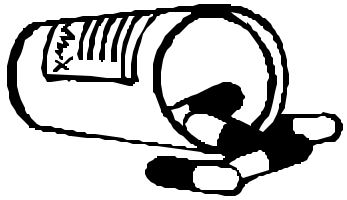
This publication is a cooperative effort between the Waste & Hazardous Materials Division, the Environmental Science and Services Division, and the Water Division of the Michigan Department of Environmental Quality

Printed on Recycled Paper

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Constitution Hall
525 W. Allegan, 1 North
PO Box 30457
Lansing, MI 48909-7957
Phone: 800-662-9278
Fax: 517-373-3675
Email: deq-ead-env-assist@michigan.gov
www.michigan.gov/deq

A Remedy for Prescription Drug Disposal . . .



*Jennifer M. Granholm, Governor * Steven E. Chester, Director*

How do I dispose of unused prescription and over-the-counter drugs?

What environmental problems exist due to disposal of expired and unused medications?

The issue of proper pharmaceutical drug disposal is an emerging issue in the environmental arena. All medications applied externally or ingested (and their bioactive transformation products) have the potential to be excreted or washed into sewage systems and from there discharged to the aquatic or terrestrial environments. The risks posed to aquatic organisms by continual life-long exposure and to humans by long-term consumption of minute quantities in drinking water are essentially unknown. While the major concerns to-date have been the promotion of pathogen resistance to antibiotics and disruption of endocrine systems by natural and synthetic sex steroids, effects due to the presence of many other pharmaceuticals and health care products in the environment, especially considering them collectively, have unknown consequences. The United States Geologic Survey has taken a lead in gathering sampling data to confirm the presence of pharmaceuticals in the environment (http://toxics.usgs.gov/regional/emc.html), and the United States Environmental Protection Agency has taken a lead in compiling information on potential environmental impacts (www.epa.gov/nerlesd1/chemistry/pharma/faq.htm#Insimpleterms).

So, what are the best disposal options?

One option is to dispose of unwanted medications at a Community household hazardous waste (HHW) collection program, if one is available. A list of local HHW programs can be found at www.deq.state.mi.us/documents/deq-essd-recycle-mihhwprograms.pdf. If no HHW collection program is available, then a household faces a medication disposal dilemma between flushing medicines down the toilet, versus placing the waste medicine in the trash. Both of these disposal routes have disadvantages. Placing substances in the household garbage can lead to inadvertent access by children and animals. While flushing the medicine down the toilet does prevent misuse of the substance, the practice can cause other problems. Specifically, when medicines are flushed down a toilet, they usually go to one of two places--a septic tank or though a series of sanitary sewers into a wastewater treatment plant (WWTP). Medicines can harm the beneficial bacteria that are responsible for breaking down waste in the septic system or at a WWTP.

When medicines go to a WWTP, several other problems can result. Many medicines are not captured or are only partially captured during a WWTP treatment process so they can pass through a WWTP intact; municipal sewage treatment plants are not engineered for pharmaceutical removal. These substances are then released into a nearby lake, river or ground water with the treated wastewater. Some medications may contain heavy metals, such as mercury containing compounds. A list identifying pharmaceutical products that contain mercury can be found through our website at: www.deq.state.mi.us/documents/deq-ead-p2-mercury-mercusetree.pdf. Alternatives to mercury containing household products can be found at: www.deq.state.mi.us/documents/deq-ead-p2-mercury-consumer.doc . For the past several decades, mercury has received increasing attention as a serious pollutant of concern due to its toxic and bioaccumulative properties. In aquatic systems mercury is often converted by bacteria to methylmercury (an organic form of mercury) which can be magnified up the aquatic food chain hundreds of thousands of times, posing a potential risk to humans and wildlife that consume fish. For all of these reasons, any and all disposal of drugs down a drain or toilet is strongly discouraged.

If your community does have a HHW collection program, the recommended option is to dispose of the medication in this manner. Make sure you safely and securely store the medication in a location not accessible to children.

Lacking this preferred option, placement in the trash or garbage with transport to a landfill is the most practical option. It is recognized that there is concern that this method could potentially allow inadvertent access of the drugs to children and/or animals during the disposal process. This access potential can be minimized by following a few simple steps.

- Keep the pharmaceuticals in their original container since the labels may contain safety information, the container is chemically compatible, and the caps are typically water tight and child-proof.
- Add a small amount of water to the solid drug or some absorbent material such as kitty litter, sawdust or flour to liquid drugs before recapping. These measures are intended to discourage any unintended use of the drug.
- Double enclose the contained drugs in a bag or any other waste container to prevent immediate identification of a drug container or prevent a glass drug container from breaking during the disposal process, e.g., when a plastic garbage bag tears, tipped trash can, etc.

For more information on this subject, review the web sites provided above or contact the Environmental Assistance Center at 800-662-9278 for direct access to Michigan Department of Environmental Quality programs.

5. State Legislation Regarding Disposal and Donation of Medicines

Currently, the United States does not have Federal regulations on proper handling of unwanted medicines; however disposal advice for individuals has been developed by the Office of National Drug Control Policy:
http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf

A summary of the key legislative actions in the last year (2008-2009) are included below, followed by a list of laws that passed prior to 2008. See the Product Stewardship Institute website for further details and links:
http://www.productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=540

National legislation*:* H.R. 1191: Safe Drug Disposal Act of 2009 was introduced by Congressman Jay Inslee (D-WA) and 20 co-sponsors on 2/25/09. (http://www.govtrack.us/congress/bill.xpd?bill=h111-1191). The last action was on 3/16/09 (House Judiciary referred it to the Subcommittee on Crime, Terrorism, and Homeland Security). Also introduced in the 111th Congress as S. 1336 by Sen. Patty Murray (D-WA).

- Seeks to amend the Controlled Substances Act to provide for disposal of controlled substances by ultimate users and care takers through State take-back disposal programs, to amend the Federal Food, Drug, and Cosmetic Act to prohibit recommendations on drug labels for disposal by flushing, and for other purposes.

- Specifically, this bill directs the DEA to, within one year, create five approved drug take back program models from which states may choose and implement.

A similar bill, H.R. 1359: Secure and Responsible Drug Disposal Act of 2009 was introduced by Congressmen Bart Stupak (D-MI) and Lamar Smith (R-TX) on 3/5/09 (http://www.govtrack.us/congress/bill.xpd?bill=h111-1359). The last action was on 4/27/09 (House Judiciary referred it to the Subcommittee on Crime, Terrorism, and Homeland Security). Also introduced in the 111th Congress as S. 1292 by Sen. Amy Klobuchar (D-MN).

- Seeks to amend the Controlled Substances Act to provide for take-back disposal of controlled substances in certain instances, and for other purposes.

Stewardship legislation: Both Maine (House Bill 055701) and Washington (Second Substitute House Bill 1165) have bills pending that identify and address funding for unwanted medicines collection programs. These bills identify who is responsible for the costs of collection and what the expected outcomes are from sustainable collection efforts. Similar legislation is pending in MN, FL and OR.

***Hospital Disposal of unneeded medicines*:** In 2009 the state of Illinois passed SB 1919: Safe Pharmaceutical Disposal Act, which prohibits health care institutions from flushing unused medications into public wastewater. Other legislation will track water usage by high capacity wells throughout the state. The new law provides that health care institutions may not discharge,

dispose, flush, pour or empty any unused medication into a public wastewater collection system or septic system. Violators are subject to a fine.
http://www.ilga.gov/legislation/BillStatus.asp?DocNum=1919&GAID=10&DocTypeID=SB&SessionID=76&GA=96

In 2007, over 500 state pharmaceutical bills and resolutions were filed on topics including discount and subsidy programs; marketing and advertising; privacy and data mining; electronic monitoring and internet prescribing; and prescription drug reuse/recycling/disposal[1]. In 2008, more than 550 pharmaceutical bills and resolutions were under consideration in at least 41 states plus Washington DC; over 100 were newly filed in 2008 legislative sessions while the rest were carried over from 2007[2]. State legislation that has passed or has been proposed relating to unwanted medicines disposal is outlined below.

A. Laws passed

1. Take-back for consumers (Maine)

Public Law 2003, chapter 679 creates the Unused Pharmaceutical Disposal Program, administered by the **Maine** Drug Enforcement Agency, to provide for the safe and effective disposal of consumers' unneeded or expired *prescription* drugs. The program involves the use of prepaid mailers to be made available to the public to mail unneeded or expired prescription drugs to a single collection location. The drugs received may be handled only by agency officers and must be disposed of in a manner that ensures the safety of the public and the environment.

The law allows the Maine Drug Enforcement Agency to randomly assess materials received under the program. Under this law, return of pharmaceuticals under this program is considered to be for law enforcement purposes (in order to comply with DEA requirements).[2] The full text of Public Law 2003, chapter 679 is included on our website (http://www.iisgcp.org/unwantedmeds/ch5.html).

The director of the Maine DEA is authorized to accept funding from private sources to carry out the purposes of the program, but the law prohibits the use of public funding for the program or for the Maine Drug Return Implementation Group. The law took effect on July 1, 2005, but due to lack of funding, it is not currently being implemented.[3]

The state legislature passed a bill (2007) providing a one-time grant to provide match to funding provided by U.S. EPA for this program.

2. Reverse Distribution for Pharmacies (Indiana)

Indiana has a law providing for disposal of *undispensed* drugs, establishing requirements for a take-back program and facilitating enforcement by requiring that: "After July 1, 2006, a pharmacist may not dispense a legend drug[4] or controlled drug unless the pharmacist has satisfactory evidence that the wholesaler or manufacturer of the drug has a procedure for the

[1] National Conference of State Legislatures online report http://www.ncsl.org/programs/health/drugbill07.htm
[2] National Conference of State Legislatures online report http://www.ncsl.org/programs/health/drugbill08.htm
[3] Law summary from the Maine state legislature's Office of Policy and Legal Analysis http://www.maine.gov/legis/opla/homepage.htm
[4] Ann Pistell, Maine Department of Environmental Protection, personal communication Nov. 1 2006.
[5] "Legend drug" refers to prescription-only medications

return of expired drugs that complies with rules adopted by the board under section 4(b)(3) of this chapter."

See http://www.in.gov/legislative/bills/2005/HB/HB1098.1.html

3. Donation Scheme for Pharmacies, Hospitals, Manufacturers, and Distributors

To view a list of states that have passed or proposed laws regarding prescription drug reuse or recycling, visit the National Conference of State Legislatures web site http://www.ncsl.org/programs/health/drugbill08.htm

For example, since 2003, **Indiana** has made provisions for a donation program for pharmacists, pharmacies, drug manufacturers, wholesale drug distributors, hospitals, health care facilities and nonprofit health clinics to collect unused medications for distribution to patients at nonprofit health clinics. They can accept medications from any of the above parties, as well as from consumers *if* the drugs are unopened and were originally issued to a patient in a hospice program or hospital (this is to require medical professional oversight to ensure that proper storage practices were followed). See http://www.in.gov/legislative/bills/2003/SB/SB0507.2.html

Illinois' House Bill 3868 would introduce a repository program where individuals as well as pharmacies and hospitals can donate unused, unopened prescription medications to be distributed to non-profit health care centers. It was referred to the rules committee March 10, 2005. See http://www.ilga.gov/legislation/94/HB/PDF/09400HB3868lv.pdf

B. Proposed Legislation

A table prepared by the National Conference of State Legislatures summarizes the 2008 prescription legislation topic by state legislative sessions nationwide. The table can be found at http://www.ncsl.org/programs/health/drugbill08.htm.

Several state legislatures have bills currently in committee that relate to medicine collection programs, highlighted below:

1. Take-back for consumers (Illinois, Massachusetts, California, Pennsylvania, Michigan, New York, Washington)

In 2005-2006, **Illinois** debated but did not pass Senate Bill SB0116 which would establish a planning committee and budget to develop a pilot medical return program (possibly a mail-back program like that in Maine). See http://www.ilga.gov/legislation/94/SB/09400SB0116.htm.

A related bill was introduced in the House this term (2007) as Amendment 001 to House Bill 2277, cosponsored by Representatives Jack McGuire and Naomi Jakobsson. It was referred to the Rules Committee May 3, 2007. http://www.ilga.gov/legislation/95/HB/PDF/09500HB2277lv.pdf.

Massachusetts' House Bill 2182 is also similar to that in Maine, establishing a task force and charging it with developing a pilot take-back program for consumers' medicines. www.mass.gov/legis/bills/house/185/ht02pdf/ht02182.pdf

In **California**, state legislators introduced a bill in February 2007 that would require all retailers of pharmaceuticals (both prescription and over-the-counter) to provide collection systems for safe disposal of consumers' excess medicines. www.leginfo.ca.gov/pub/07-

08/bill/sen/sb_0951-1000/sb_966_bill_20070223_introduced.html. This bill, SB 966, passed the Senate and the Assembly, and was sent to the governor in September 2007 (for bill history see http://info.sen.ca.gov/cgi-bin/postquery?bill_number=sb_966&sess=CUR&house=B&site=sen). In October 2007, Governor Arnold Schwarzenegger signed legislation requiring the state's Integrated Waste Management Board to develop by the end of the 2008 model programs for the collection and proper disposal of household pharmaceuticals. See http://info.sen.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_966_bill_20071012_chaptered.pdf.

State legislators in **Pennsylvania** have proposed to the General Assembly of Pennsylvania House Bill No. 2073, which would require retailers of pharmaceutical drugs to have in place a system for the acceptance and collection of pharmaceutical drugs for proper disposal and impose civil penalties. This bill was referred to the Committee on Natural Resources and Energy on November 29, 2007. The act shall be known as the Pharmaceutical Drug Disposal Act. The goal is to establish a program by July 1, 2009 that ensures the safe and environmentally sound disposal of pharmaceutical drugs that is convenient for consumers and cost effective for retailers. www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2007&sessInd=0&billBody=H&billTyp=B&billNbr=2073&pn=2908

Michigan's House Bill 5186 would mandate the creation of a disposal and recycling program for consumers' prescription drugs. It was referred to the Committee on Natural Resources, Great Lakes, Land Use, and Environment in September, 2005. See www.legislature.mi.gov/documents/2005-2006/billintroduced/House/htm/2005-HIB-5186.htm

New York's State Assembly Bill A840 proposed in January 2007 would prohibit the disposal of drugs as solid waste in a landfill; requires drug manufacturers to establish drug collection programs to accept unused or expired drugs from consumers; require consumers to return drugs to such a drug collection program; require all drugs collected by a manufacturer to be disposed of in an environmentally sound manner; direct the department of environmental conservation to establish and implement a public information program on the proper disposal of drugs; require pharmacies and other retailers to post information on the proper use, storage and disposal of drugs. See http://assembly.state.ny.us/leg/?bn=A840. This legislation outlines the responsibilities of all parties: pharmaceutical manufacturers, the State of New York, and consumers. As of January 9, 2008, the bill was referred to the Environmental Conservation Committee.

In **Washington**, House Bill 2600 proposed on January 10, 2008, would create a producer managed and funded product stewardship program to collect and dispose of unwanted residential drugs. Every producer of covered products sold in or into the state would be required to participate in the program by January 1, 2010. The bill also provides that a producer or group of producers who operates or wishes to operate a product stewardship program, or a stewardship organization that operates or wishes to operate a program on a producer's behalf, must submit a plan. The bill also provides that the Washington state Board of Pharmacy and the Department of Ecology may adopt any rules necessary to enact, implement, administer, and enforce this act. See http://apps.leg.wa.gov/billinfo/summary.aspx?bill=2600&year=2007

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Guidelines for Drug Donations

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World Health Organization
Caritas Internationalis
Churches' Action for Health of the World Council of Churches
International Committee of the Red Cross
International Federation of Red Cross and Red Crescent Societies
International Pharmaceutical Federation
Joint United NationsProgramme on HIV/AIDS
Médecins Sans Frontières
Office of the United Nations High Commissioner for Refugees
OXFAM
Pharmaciens Sans Frontières
United Nations Children's Fund
United Nations Development Programme
United Nations Population Fund
World Bank

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IV. Guidelines for drug donations

Selection of drugs

1. All drug donations should be based on an expressed need and be relevant to the disease pattern in the recipient country. Drugs should not be sent without prior consent by the recipient.

Justification and explanation

This provision stresses the point that it is the prime responsibility of the recipients to specify their needs. It is intended to prevent unsolicited donations, and donations which arrive unannounced and unwanted. It also empowers the recipients to refuse unwanted gifts.

Possible exceptions

In acute emergencies the need for prior consent by the recipient may be waived, provided the drugs are amongst those from the WHO Model List of Essential Drugs[5] that are included in the UN list of emergency relief items recommended for use in acute emergencies.[6]

2. All donated drugs or their generic equivalents should be approved for use in the recipient country and appear on the national list of essential drugs, or, if a national list is not available, on the WHO Model List of Essential Drugs, unless specifically requested otherwise by the recipient.

Justification and explanation

This provision is intended to ensure that drug donations comply with national drug policies and essential drugs programmes. It aims at maximizing the positive impact of the donation, and prevents the donation of drugs which are unnecessary and/or unknown in the recipient country.

Possible exceptions

An exception can be made for drugs needed in sudden outbreaks of uncommon or newly emerging diseases, since such drugs may not be approved for use in the recipient country.

3. The presentation, strength and formulation of donated drugs should, as much as possible, be similar to those of drugs commonly used in the recipient country.

Justification and explanation

Most staff working at different health care levels in the recipient country have been trained to use a certain formulation and dosage schedule and cannot constantly change their treatment practices. Moreover, they often have insufficient training in performing the necessary dosage calculations required for such changes.

Quality assurance and shelf-life

4. All donated drugs should be obtained from a reliable source and comply with quality standards in both donor and recipient country. The WHO Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce[7] should be used.

Justification and explanation
This provision prevents double standards: drugs of unacceptable quality in the donor country should not be donated to other countries. Donated drugs should be authorized for sale in the country of origin, and manufactured in accordance with international standards of Good Manufacturing Practice (GMP).
Possible exceptions
In acute emergencies the use of the WHO Certification Scheme may not be practical. However, if it is not used, a justification should be given by the donor. When donors provide funds to purchase drugs from local producers, those which comply with national standards should not be excluded on the sole grounds that they do not meet quality standards of the donor country.

5. No drugs should be donated that have been issued to patients and then returned to a pharmacy or elsewhere, or were given to health professionals as free samples.

Justification and explanation
Patients return unused drugs to a pharmacy to ensure their safe disposal; the same applies to drug samples that have been received by health workers. In most countries it is not allowed to issue such drugs to other patients, because their quality cannot be guaranteed. For this reason returned drugs should not be donated either. In addition to quality issues, returned drugs are very difficult to manage at the receiving end because of broken packages and the small quantities involved.

6. After arrival in the recipient country all donated drugs should have a remaining shelf-life of at least one year. An exception may be made for direct donations to specific health facilities, provided that: the responsible professional at the receiving end acknowledges that (s)he is aware of the shelf-life; and that the quantity and remaining shelf-life allow for proper administration prior to expiration. In all cases it is important that the date of arrival and the expiry dates of the drugs be communicated to the recipient well in advance.

Justification and explanation
In many recipient countries, and especially under emergency situations, there are logistical problems. Very often the regular drug distribution system has limited possibilities for immediate distribution. Regular distribution through different storage levels (e.g. central store, provincial store, district hospital) may take six to nine months. This provision especially prevents the donation of drugs just before their expiry, as in most cases such drugs would only reach the patient after expiry. It is important that the recipient official responsible for acceptance of the donation is fully aware of the quantities of drugs being

donated, as overstocking may lead to wastage. The argument that short-dated products can be donated in the case of acute emergencies, because they will be used rapidly, is incorrect. In emergency situations the systems for reception, storage and distribution of drugs are very often disrupted and overloaded, and many donated drugs tend to accumulate.

Additional exception

Besides the possible exception for direct donations mentioned above, an exception should be made for drugs with a total shelf-life of less than two years, in which case at least one-third of the shelf-life should remain.

Presentation, packing and labelling

7. All drugs should be labelled in a language that is easily understood by health professionals in the recipient country; the label on each individual container should at least contain the International Nonproprietary Name (INN) or generic name, batch number, dosage form, strength, name of manufacturer, quantity in the container, storage conditions and expiry date.

Justification and explanation

All donated drugs, including those under brand name, should be labelled also with their INN or the official generic name. Most training programmes are based on the use of generic names. Receiving drugs under different and often unknown brand names and without the INN is confusing for health workers and can even be dangerous for patients. In the case of injections, the route of administration should be indicated.

8. As much as possible, donated drugs should be presented in larger quantity units and hospital packs.

Justification and explanation

Large quantity packs are cheaper, less bulky to transport and conform better with public sector supply systems in most developing countries. This provision also prevents the donation of drugs in sample packages, which are impractical to manage. In precarious situations, the donations of paediatric syrups and mixtures may be inappropriate because of logistical problems and their potential misuse.

9. All drug donations should be packed in accordance with international shipping regulations, and be accompanied by a detailed packing list which specifies the contents of each numbered carton by INN, dosage form, quantity, batch number, expiry date, volume, weight and any special storage conditions. The weight per carton should not exceed 50 kilograms. Drugs should not be mixed with other supplies in the same carton.

Justification and explanation

This provision is intended to facilitate the administration, storage and distribution of donations in emergency situations, as the identification and management of unmarked boxes with mixed drugs is very time- and labour-intensive. This

provision specifically discourages donations of small quantities of mixed drugs. The maximum weight of 50 kilograms ensures that each carton can be handled without special equipment.

Information and management

10. Recipients should be informed of all drug donations that are being considered, prepared or actually under way.

Justification and explanation

Many drug donations arrive unannounced. Detailed advance information on all drug donations is essential to enable the recipient to plan for the receipt of the donation and to coordinate the donation with other sources of supply. The information should at least include: the type and quantities of donated drugs including their International Nonproprietary Name (INN) or generic name, strength, dosage form, manufacturer and expiry date; reference to earlier correspondence (for example, the letter of consent by the recipient); the expected date of arrival and port of entry; and the identity and contact address of the donor.

11. In the recipient country the declared value of a drug donation should be based upon the wholesale price of its generic equivalent in the recipient country, or, if such information is not available, on the wholesale world-market price for its generic equivalent.

Justification and explanation

This provision is needed solely to prevent drug donations being valued in the recipient country according to the retail price of the product in the donor country. This may lead to elevated overhead costs for import tax, port clearance and handling in the recipient country. It may also result in a corresponding decrease in the public sector drug budget in the recipient country.

Possible exception

In the case of patented drugs (for which there is no generic equivalent) the wholesale price of the nearest therapeutic equivalent could be taken as a reference.

12. Costs of international and local transport, warehousing, port clearance and appropriate storage and handling should be paid by the donor agency, unless specifically agreed otherwise with the recipient in advance.

Justification and explanation

This provision prevents the recipient from being forced to spend effort and money on the clearance and transport of unannounced consignments of unwanted items, and also enables the recipient to review the list of donated items at an early stage.

6. International Policy on Medicine Donations

"As soon as any disaster reaches our television screens, many drugs, the great majority sent with the best of intentions, are dispatched to the scene of the emergency. However, there also have been problems with some drug donations. They fail to meet the most urgent real health needs and, once in the country, they clog up already overloaded distribution systems and become difficult to dispose of."
-- Dr. Jonathan Quick, Director of the World Health Organization's Department of Essential Drugs and Other Medicines (cited in a WHO press release on September 3, 1999)

The donation of improper medicines to humanitarian relief efforts has proven to be a major problem for aid organizations. In some cases, the donated medicines have passed their expiration dates before they reach their destination and cannot be safely administered to patients. In other cases, donors send medicines that are not relevant to the recipients' situation under the mistaken assumption that anything is better than nothing. And because drug formulations vary between countries, some donated medicines may be unfamiliar to health care relief workers. Such unknown or mistakenly identified medicine donations have had harmful effects on patients and are not safe for distribution.

The aid organization is then left with the burden of sorting and disposing of large quantities of medicines. Since the donations frequently go to situations of crisis, environmental safeguards for hazardous waste disposal may not be available. See some examples of the problems caused by unusable donations at www.drugdonations.org/eng/richtlijnen/cases.html.

Therefore, although a charitable donation may initially sound like a good use for leftover medicines, it is inadvisable in most cases. The items received at a community collection event are *not* eligible for donation. Medicines that have been kept under the care of a medical professional, such as undispensed medicines from pharmacies or hospitals or unsold medicines from manufacturers, will be usable in some cases. It is always vital to consult with the intended recipients on what types of medicines are needed. Further guidance is available from the Partnership for Quality Medical Donations (http://pqmd.org/guidelines.html) and from the World Health Organization's "Guidelines for Drug Donations," online at **www.euro.who.int/document/EHA/PAR_Donate_Guidelines.pdf**. The World Health Organization guidelines are reprinted in this resource kit.

For related information on guidelines for international medicine donations, see www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf and www.drugdonations.org/eng/richtlijnen/to_make_a_donation_.html.

An article by Hans Hogerzeil in the *British Medical Journal* discusses inappropriate medical donations and guidelines for ensuring that donations are of high quality and are suitable for the situation. See http://www.bmj.com/cgi/content/full/314/7082/737#top. Also, the World Bank has published a study on drug donations, exploring where and why inappropriate donations occur and examining the influence of the WHO guidelines. That report is available online at http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/Nassery-DrugDonation-whole.pdf.

7. Bibliography of Literature on Pharmaceuticals and the Environment

The following pages highlight articles related to unwanted medicines and other pharmaceuticals in the environment from scientific journals, newspapers, magazines, and radio. These articles describe the current state of knowledge about where unwanted medicine chemicals have been detected in the environment and the observed effects of pharmaceuticals on living organisms.

The list printed in this resource kit was last updated December 2009. Please consult www.iisgcp.org/unwantedmeds for subsequent updates.

A bibliography of additional literature on pharmaceuticals in the environment is available online at www.epa.gov/ppcp/lit.html.

Scientific Journal Publications/Research

The list printed in this resource kit was last updated December 2009. Please consult **www.iisgcp.org/unwantedmeds** for subsequent updates.

Bound, Jonathan P., and Nikolaos Voulvoulis. 2005. "Household Disposal of Pharmaceuticals as a Pathway for Aquatic Contamination in the United Kingdom." Environmental Health Perspectives 113(12):1705-1711.
http://www.ehponline.org/docs/2005/8315/abstract.html

Abstract: Pharmaceuticals are produced and used in increasingly large volumes every year. With this growth comes concern about the fate and effects of these compounds in the environment. The discovery of pharmaceuticals in the aquatic environment has stimulated research in the last decade. A wide range of pharmaceuticals has been found in fresh and marine waters, and it has recently been shown that even in small quantities, some of these compounds have the potential to cause harm to aquatic life. The primary pathway into the environment is the use and disposal of medicines; although much of the research in the area currently focuses on the removal of pharmaceuticals during sewage treatment processes, disposal via household waste might be a significant pathway requiring further research. To investigate the household disposal of unused and expired pharmaceuticals as a source of pharmaceutical compounds in the environment, we carried out a survey and interviewed members of 400 households, predominantly from southeastern England. We used the information on when and how they disposed of unfinished pharmaceuticals to construct a conceptual model to assess the pathways of human pharmaceuticals into the environment. The model demonstrated that **disposal of unused pharmaceuticals, either by household waste or via the sink or toilet, may be a prominent route that requires greater attention.**

Boxall, Alistair B. 2004. "The Environmental Side Effects of Medication." European Molecular Biology Organization Reports 5(12):1110-1116.
http://www.nature.com/embor/journal/v5/n12/full/7400307.html

Abstract: Medicines have an important role in the treatment and prevention of disease in both humans and animals. But it is because of the very nature of medicines that they may also have unintended effects on animals and microorganisms in the environment. Although the side effects on human and animal health are usually investigated in thorough safety and toxicology studies, **the potential environmental impacts of the manufacture and use of medicines are less well understood and have only recently become a topic of research interest.** Some of the effects of various compounds—most notably anthelmintics from veterinary medicine and antibacterial therapeutics—are already known (Daughton & Ternes, 1999; Boxall *et al*, 2003a, 2004a; Floate *et al*, 2005), but there are many other substances that can affect organisms in the environment. This is further complicated by the fact that some pharmaceuticals can cast effects on bacteria and animals well below the concentrations that are usually used in safety and efficacy tests. In addition, breakdown products and the combination of different biologically active compounds may have unanticipated effects on the environment. Although it may be safe to assume that these

substances do not substantially harm humans, we have only recently begun to research whether and how they affect a wide range of organisms in the environment and what this means for environmental health.

Daughton, C.G. 2003. "Cradle-to-Cradle Stewardship of Drugs for Minimizing Their Environmental Disposition while Promoting Human Health."
"I. Rationale for and Avenues toward a Green Pharmacy." Environ. Health Perspect., 111:757-774. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1241487

and

Daughton, C.G. 2003. "II. Drug Disposal, Waste Reduction, and Future Direction." Environ. Health Perspect., 111:775-785.
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1241488

Abstract: Since the 1980s, the occurrence of pharmaceuticals and personal care products (PPCPs) as trace environmental pollutants, originating primarily from consumer use and actions rather than manufacturer effluents, continues to become more firmly established. Although PPCPs typically have been identified in surface and ground waters, some are also undoubtedly associated with solid phases such as suspended particulates, sediments, and sewage sludges, despite their relatively high affinity for water. Often amenable to degradation, their continual introduction to waste-receiving waters results from their widespread, continuous, combined use by individuals and domestic animals, giving PPCPs a "pseudo-persistence" in the environment. Little is known about the environmental or human health hazards that might be posed by chronic, subtherapeutic levels of these bioactive substances or their transformation products. The continually growing, worldwide importance of freshwater resources, however, underscores the need for ensuring that any aggregate or cumulative impacts on (or from) water supplies are minimized. Despite the paucity of effects data from longterm, simultaneous exposure at low doses to multiple xenobiotics (particularly non-target-organism exposure to PPCPs), a wide range of proactive actions could be implemented to reduce or minimize the introduction of PPCPs to the environment. Most of these actions fall under what could be envisioned as a holistic stewardship program—overseen by the health care industry and consumers alike. Significantly, such a stewardship program would benefit not just the environment; additional, collateral benefits could automatically accrue, including reducing consumers' medication expenses and improving patient health and consumer safety. In this article, the first of a two-part mini-monograph describing the "green pharmacy," **I focus initially on the background behind the imperative for an ecologically oriented stewardship program for PPCPs. I then present a broad spectrum of possible source control/reduction actions, controlled largely by the health care industry, that could minimize the disposition of PPCPs to the environment.**

In the second of two parts describing the "green pharmacy" **I focus on those actions and activities tied more closely to the end user (e.g., the patient) and issues associated with drug disposal/recycling that could prove useful in minimizing the environmental disposition of PPCPs. I also outline some recommendations and suggestions for further research and pose some considerations regarding the future.**

This two-part mini-monograph attempts to capture cohesively for the first time the wide spectrum of actions available for minimizing the release of PPCPs to the environment. A major objective is to generate an active dialog or debate across the many disciplines that must become actively involved to design and implement a successful approach to life-cycle stewardship of PPCPs.

Daughton, Christian G. and Thomas A. Ternes. 1999. "Pharmaceuticals and Personal Care Products in the Environment: Agents of Subtle Change?" Environmental Health Perspectives 107(6):907-938.
http://www.ehponline.org/members/1999/suppl-6/907-938daughton/daughton-full.html

Abstract: During the last three decades, the impact of chemical pollution has focused almost exclusively on the conventional "priority" pollutants, especially those acutely toxic/carcinogenic pesticides and industrial intermediates displaying persistence in the environment. This spectrum of chemicals, however, is only one piece of the larger puzzle in "holistic" risk assessment. Another diverse group of bioactive chemicals receiving comparatively little attention as potential environmental pollutants includes the pharmaceuticals and active ingredients in personal care products (in this review collectively termed PPCPs), both human and veterinary, including not just prescription drugs and biologics, but also diagnostic agents, "nutraceuticals," fragrances, sun-screen agents, and numerous others. These compounds and their bioactive metabolites can be continually introduced to the aquatic environment as complex mixtures via a number of routes but primarily by both untreated and treated sewage. Aquatic pollution is particularly troublesome because aquatic organisms are captive to continual life-cycle, multigenerational exposure. **The possibility for continual but undetectable or unnoticed effects on aquatic organisms is particularly worrisome** because effects could accumulate so slowly that major change goes undetected until the cumulative level of these effects finally cascades to irreversible change--change that would otherwise be attributed to natural adaptation or ecologic succession. **As opposed to the conventional, persistent priority pollutants, PPCPs need not be persistent if they are continually introduced to surface waters**, even at low parts-per-trillion to parts-per-billion concentrations (ng to µg/L). Even though some PPCPs are extremely persistent and introduced to the environment in very high quantities and perhaps have already gained ubiquity worldwide, others could act as if they were persistent, simply because their continual infusion into the aquatic environment serves to sustain perpetual life-cycle exposures for aquatic organisms. This review attempts to synthesize the literature on environmental origin, distribution/occurrence, and effects and to catalyze a more focused discussion in the environmental science community.

Glassmeyer, S.T., E. K. Hinchey, S. E. Boehme, C. G. Daughton, I. S. Ruhoy, O. Conerly, R. L. Daniels, L. Lauer, M. McCarthy, T. G. Nettesheim, K. Sykes, V. G. Thompson. 2009. "Disposal practices for unwanted residential medicines in the U.S." Environment International 35:566-572.

Abstract: The occurrence of trace levels of prescription and over-the-counter pharmaceuticals in the environment began to receive concerted attention nearly two decades ago. The public's growing awareness and concern over the presence of these chemicals, especially in drinking water, has served to catalyze considerable discussion and debate regarding the best practices for

disposal of unused or unwanted medications. In the United States, the first federal guidance for consumers was issued in 2007. It recommends discarding unused pharmaceuticals to household trash, after taking precautions to mix the pharmaceuticals with an inert substance and conceal the contents from view. Providing the consumer with additional options for conscientious disposal are various community, city, and state collection events, ongoing programs, and government-funded pilot projects. These strategies include the opportunity to mail or bring unused medications to various collection points, such as pharmacies, for eventual destruction. All of these approaches to medication disposal play roles in reducing the introduction of pharmaceuticals to the environment.

Hemminger, Pat. 2005. "Damming the Flow of Drugs Into Drinking Water." Environmental Health Perspectives 113(10):678-681.
http://www.ehponline.org/members/2005/113-10/spheres.html

Discusses the European Medicines Agency's guidance on ecotoxicity testing and environmental risk assessment for new drugs.

Abstract: Roughly 100 pharmaceuticals have now been identified in rivers, lakes, and coastal waters throughout Europe and the United States in concentrations of parts per billion to parts per trillion. The first major European studies on this topic--in journals such as volume 67, issue 1-4 (1997) of the *International Journal of Environmental Analytical Chemistry* and the November 1998 issue of *Water Research*-- examined German ground and surface waters, and found occurrences of drugs including cholesterol regulators, analgesics, and antiseizure medications. Since that time, numerous other studies have documented the presence of pharmaceuticals, including potential endocrine disruptors, in other locales as well.

Kolpin, Dana W., Edward T. Furlong, Michael T. Meyer, E. M. Thurman, Steven D. Zaugg, Larry B. Barber, and Herbert T. Buxton. 2002. "Pharmaceuticals: Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: a National Reconnaissance." Environmental Science & Technology 36(6):1202-1211.
http://pubs.acs.org/cgi-bin/article.cgi/esthag/2002/36/i06/pdf/es011055j.pdf

Abstract: To provide the first nationwide reconnaissance of the occurrence of pharmaceuticals, hormones, and other organic wastewater contaminants (OWCs) in water resources, the U.S. Geological Survey used five newly developed analytical methods to measure concentrations of 95 OWCs in water samples from a network of 139 streams across 30 states during 1999 and 2000. The selection of sampling sites was biased toward streams susceptible to contamination (i.e. downstream of intense urbanization and livestock production). **OWCs were prevalent during this study, being found in 80% of the streams sampled**. The compounds detected represent a wide range of residential, industrial, and agricultural origins and uses with 82 of the 95 OWCs being found during this study. The most frequently detected compounds were coprostanol (fecal steroid), cholesterol (plant and animal steroid), *N*,*N*-diethyltoluamide (insect repellant), caffeine (stimulant), triclosan (antimicrobial disinfectant), tri(2-chloroethyl)phosphate (fire retardant), and 4-nonylphenol (nonionic detergent metabolite). Measured concentrations for this study were generally low and rarely exceeded drinking-water guidelines, drinking-water

health advisories, or aquatic-life criteria. Many compounds, however, do not have such guidelines established. The detection of multiple OWCs was common for this study, with a median of seven and as many as 38 OWCs being found in a given water sample. Little is known about the potential interactive effects (such as synergistic or antagonistic toxicity) that may occur from complex mixtures of OWCs in the environment. In addition, results of this study demonstrate the importance of obtaining data on metabolites to fully understand not only the fate and transport of OWCs in the hydrologic system but also their ultimate overall effect on human health and the environment.

Nash, Jon P., David E. Kime, Leo T. Van Der Ven, Piet W. Wester, Francois Brion, Gerd Maack, Petra Stahlschmidt-Allner, and Charles R. Tyler. 2004. "Long-Term Exposure to Environmental Concentrations of the Pharmaceutical Ethynylestradiol Causes Reproductive Failure in Fish." Environmental Health Perspectives 112(17):1725-1733. http://www.ehponline.org/members/2004/7209/7209.html

Abstract: Heightened concern over endocrine-disrupting chemicals is driven by the hypothesis that they could reduce reproductive success and affect wildlife populations, but there is little evidence for this expectation. The pharmaceutical ethynylestradiol (EE_2) is a potent endocrine modulator and is present in the aquatic environment at biologically active concentrations. To investigate impacts on reproductive success and mechanisms of disruption, we exposed breeding populations (n = 12) of zebrafish (*Danio rerio*) over multiple generations to environmentally relevant concentrations of EE_2. **Life-long exposure to 5 ng/L EE_2 in the F_1 generation caused a 56% reduction in fecundity and complete population failure with no fertilization.** Conversely, the same level of exposure for up to 40 days in mature adults in the parental F_0 generation had no impact on reproductive success. Infertility in the F_1 generation after life-long exposure to 5 ng/L EE_2 was due to disturbed sexual differentiation, with males having no functional testes and either undifferentiated or intersex gonads. These F_1 males also showed a reduced vitellogenic response when compared with F_0 males, indicating an acclimation to EE_2 exposure. Depuration studies found only a partial recovery in reproductive capacity after 5 months. Significantly, even though the F_1 males lacked functional testes, they showed male-pattern reproductive behavior, inducing the spawning act and competing with healthy males to disrupt fertilization. Endocrine disruption is therefore likely to affect breeding dynamics and reproductive success in group-spawning fish. Our findings raise major concerns about the population-level impacts for wildlife of long-term exposure to low concentrations of estrogenic endocrine disruptors.

Potera, Carol. 2000. "Drugged Drinking Water." Environ. Health Perspectives 108(10):446.

Abstract: Drugs and personal care products that are excreted from or washed off the body naturally end up in the sewage that flows into sewer systems and septic tanks, but where do they go from there? Scientists are beginning to monitor the extent of pharmaceutical and personal care products (PPCPs) in the aquatic environment and their consequences. What they're finding is that, **through leaching from septic tanks and escaping intact through sewage treatment processes, some of these substances are ending up back in the drinking water.**

Velagaleti, Ranga, Philip K. Burns, Michael Gill, and James Prothro. 2002. “Impact of Current Good Manufacturing Practices and Emission Regulations and Guidances on the Discharge of Pharmaceutical Chemicals Into the Environment From Manufacturing, Use, and Disposal.” Environmental Health Perspectives 110(3): 213-220.
http://www.ehponline.org/members/2004/7209/7209.html

Abstract: The current Good Manufacturing Practice (cGMP) and effluent emission (use and disposal) regulations of the U.S. Food and Drug Administration (FDA) and manufacturing effluent discharge and emission regulations of the U.S. Environmental Protection Agency (U.S. EPA) require contained manufacture, use, and disposal of pharmaceuticals with the goal of minimizing the release of pharmaceutical chemicals into the environment. However, debate has recently arisen in several scientific forums over whether these regulations adequately protect human and environmental health from the new pharmaceutical drugs introduced each year into the marketplace and the multitude of existing products, each with many distinct biochemical modes of actions. To address this issue, it is important to understand the relevance of current cGMP regulations and emission regulations that have a direct bearing on the releases of pharmaceutical chemicals into the environment during the manufacture, use, and disposal of active pharmaceutical ingredients (drug substances) and drug products. This knowledge may help us assess the quantity of residues that may be released into the environment. Additionally, the information on physical, chemical, and degradation and sorption properties of the pharmaceutical chemicals may help determine the net residue levels that could persist in the environment to evaluate if such residues have any bearing on human and environmental health. **The scientific and regulatory aspects of issues related to the manufacture, use, and disposal of pharmaceutical chemicals are discussed in this article, with special emphasis on potential environmental exposure pathways during the life cycle of an active pharmaceutical ingredient or drug product.** The mechanisms of degradation (transformation or depletion) and dilution of pharmaceutical residues that may be released into aquatic or terrestrial environmental compartments are described. Such degradation and dilution of pharmaceutical chemicals in the environment may significantly reduce the residues. It is important to evaluate whether such residue levels have any measurable impact on human and/or environmental health.

News Reports

The news reports have been updated in 2009. Please consult **www.iisgcp.org/unwantedmeds** for subsequent updates.

Effects of Pharmaceuticals in the Environment

Associated Press Enterprise: Feds mull regulating drugs in water (By National Writer Jeff Donn) "Feds mull regulating drugs in water" Dec. 2009. http://news.yahoo.com/s/ap/20091222/ap_on_he_me/us_pharmawater_drinking

Associated Press Investigation: Pharmaceuticals found in drinking water. (by By Jeff Donn, Martha Mendoza and Justin Pritchard, Associated Press Writers) "Pharmaceuticals found in drinking water, affecting wildlife and maybe humans" http://hosted.ap.org/specials/interactives/pharmawater_site/

Brodie, Christopher. "Persistently Clean? Antimicrobials accumulate in the municipal sludge used to fertilize crops." American Scientist. Jan./Feb. 2007. http://www.americanscientist.org/template/AssetDetail/assetid/54434

Cornwall, Warren, and Keith Ervin. "Hormonal chemicals may be imperiling fish." The Seattle Times. April 1, 2007. http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=hormone01m&date=20070401

Dean, Cornelia. "Drugs Are in the Water. Does It Matter?" The New York Times. April 3, 2007. http://www.nytimes.com/2007/04/03/science/earth/03water.html?_r=1&oref=slogin

Dickinson, Boonsri and Todd Neff. "Effluent changes gender of fish." Scripps Howard News Service. December 12, 2006. http://www.trib.com/articles/2006/12/12/news/regional/87a0a21fccb3d8a587257241006d1666.txt

Eilperin, Juliet. "More Flushed Pharmaceuticals Turning Up in Our Waterways." The Seattle Times. July 1, 2005. http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=pollute01&date=20050701

Frank, Patricia. "The Next Drug Problem." American City and County. June 1, 2007. http://americancityandcounty.com/water/government_next_drug_problem/

Kidd, Karen. "Hormones and Hormone Mimics in the Aquatic Environment." Eco-Journal. Published by Manitoba Eco-Network, Jan/Feb 2003. http://www.mbeconetwork.org/archives/Eco-Journal13(1).pdf

Mittelstaedt, Martin. "Estrogen threatens minnow manhood." The Globe and Mail. May 22, 2007. (archived; requires subscription or pay-per-view). www.theglobeandmail.com/servlet/story/LAC.20070522.FISH22/TPStory/TPNational/Ontario/

"Potomac 'intersex' fish worry scientists." Associated Press. Sept. 6, 2006.

Raloff, Janet. “Drugged Waters.” Science News Online. (March 21, 1998). http://sciencenews.org/pages/sn_arc98/3_21_98/bob1.htm

Raloff, Janet. “Excreted Drugs: Something Looks Fishy.” Science News Online. Vol. 157, No. 25 (June 2000). http://sciencenews.org/articles/20000617/fob1.asp

Raloff, Janet. “More Waters Test Positive for Drugs.” Science News Online. Vol. 157, No.14 (April 2000). http://sciencenews.org/articles/20000401/fob1.asp

Royte, Elizabeth. “Drugging the Waters.” OnEarth magazine. Published by National Resources Defense Council, Fall 2006. pp. 26-31. www.nrdc.org/onearth/06fal/waters1.asp

Spanne, Autumn. “Human hormones hurt lobsters.” The Standard-Times. Jan. 14, 2007. http://www.southcoasttoday.com/daily/01-07/01-14-07/01perspective.htm

Spinner, Kate. “From estrogen to Prozac, drugs we flush may end up in shark's bloodstreams.” Sarasota Herald-Tribune. June 2, 2007.

Tode, Laura. “Teens examine effect of estrogen in water.” Billings Gazette. April 6, 2007. http://www.billingsgazette.net/articles/2007/04/06/news/local/20-estrogen.txt

Underwood, Anne. “Rivers of Doubt.” Newsweek. June 4, 2007.

Wollheim, Peter. “A Fish Problem This Big.” Boise Weekly. Jan. 17, 2007. http://www.boiseweekly.com/gyrobase/Content?oid=oid%3A215775

Collection/Safe Disposal Initiatives

Crosby, Denise. “Flushing old pills? Toss out that idea.” Beacon News (Aurora, IL). Aug. 12, 2007.http://www.suburbanchicagonews.com/beaconnews/news/507213,2_1_AU12_DENISE_S1.article

Gentile, Jennifer. “Novel program to curb pollution from drugs.” The Reporter (Vacaville, CA). Jan. 7, 2007. www.thereporter.com (archived; log-in and fee required to view article. Describes Vacaville’s collection system for households’ unwanted medicines.)

Gressitt, Stevan. “Getting Rid of Unusual Drugs a Step to Safety.” Bangor Daily News. June 16, 2006. www.bangordailynews.com (archived; log-in and fee required to view article.) Introduces Maine’s medicine take-back system.

“Pharmaceuticals Eyed By EPA for Inclusion on Water Contaminant List.” Inside Washington Publishers. April 5, 2006.

Quirmbach, Chuck. “Flushed Pills Hurt Fish.” Wisconsin Public Radio. Sept. 19, 2006. Listen online at http://www.wpr.org/news/archives/0609.cfm

Rastogi, Nina Shen. “Should You Flush Your Drugs Down the Toilet?: The greenest way to get rid of old prescription meds.” Slate Magazine. Dec. 1, 2009. http://www.slate.com/id/2236431/

Seely, Ron. “Flushed drugs pollute water.” Wisconsin State Journal. Dec. 10, 2006. (freelance author’s work not available through online archives).

“Wildlife Service, Pharmacists Eye Program to Limit Drug Disposal.” Inside Washington Publishers. Sept. 25, 2006.

Power Point Presentation: Overview of the Issue

This presentation provides an overview of the issue, discussing the environmental and safety hazards related to unwanted medicines and describing the efforts that have been made to prevent unwanted medicines from being disposed of improperly.

Speaker's notes are provided on the CD for each slide for community organizers and officials who wish to use this presentation as the basis for their own outreach.

The Problem of Unwanted Medicines: Environmental Impacts of Unwanted Medicines and Best Disposal Practices

Susan Boehme, Ph.D. and Elizabeth Hinchey Malloy, Ph.D.

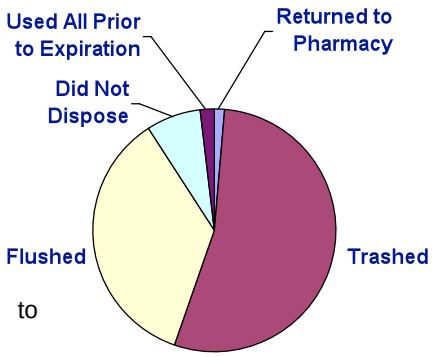
Extension Specialists, Illinois-Indiana Sea Grant
&
Liaisons to the U.S. Environmental Protection Agency Great Lakes National Program Office

Sea Grant
ILLINOIS - INDIANA

Expired Medication Disposal Habits

500 patients surveyed:

- **54%** disposed of medications in the trash
- **35.4%** flushed drugs down the toilet or sink
- **7.2%** did not dispose of medications
- **2%** used all medication prior to expiration
- **1.4%** returned medications to the pharmacy



Kuspis and Krenzelok. 1996. "What happens to expired medications? A survey of community medication disposal." Vet Hum Toxicol. 38(1):48-9

Pharmaceuticals and Personal Care Products (PPCPs)

- Includes prescription and over-the-counter (OTC) medications, cleaning agents, cosmetics, nutritional supplements & skin care products

- Produced and used in larger volumes yearly
  - 2006: over $274 billion was spent on over 3.7 million prescriptions
  - Consumption increased significantly in last 20 yrs
  - UN projects a 3-fold increase in next 25 years

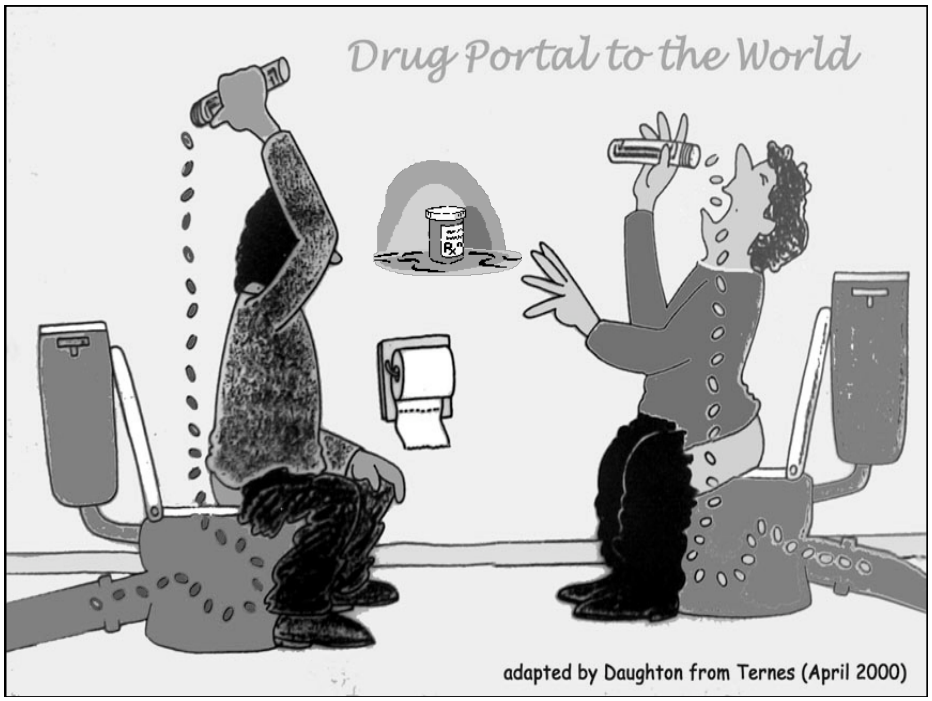
Disposal of Unwanted Medicines

In some cases, medicines are not entirely consumed due to:

- Change in prescription
- Patient's health improves before finishing medicine
- Patient death
- Patient non-compliance
- Expiration date reached
- Bulk "economy size" containers of over-the-counter medicines contain more than is needed

Main Risks of Improper Disposal Practices

- Environmental impact
  - Accumulation in waterways → potentially harmful effects on wildlife
- Accidental ingestion (children & elderly)
  - In 2003, 78,000 children under were 5 treated for unintentional medication poisoning in U.S.
- Illegal use or theft
  - Appropriation of pharmaceuticals by family and friends, workers in homes, open houses, and burglars
- Unnecessary accumulation & waste of health care $$$



Medicines in the Environment

U.S. Geological Survey monitoring study

- 139 streams analyzed in 30 states
- Contaminants identified in 80% of these streams
- 82 contaminants identified (many were pharmaceuticals)
- Co-occurrence common; average 7 distinct contaminants identified per stream

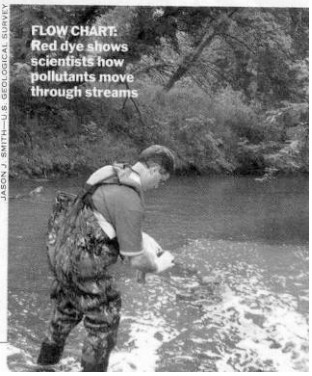
Kolpin, D.W. et al. 2002. “Pharmaceuticals, hormones, & other organic wastewater contaminants in U.S. streams, 1999-2000: A national reconnaissance.” Environmental Science & Technology. 36(6):1202-1211.

In Our Streams: Prozac and Pesticides

WASTEWATER-TREATMENT PLANTS are pretty good at getting rid of common pollutants like bacteria and heavy metals, but a nationwide survey last year showed that plenty of manmade chemicals still get through. U.S. rivers and streams are tainted with, among other things, pesticides, antibiotics and even common drugs such as aspirin and Prozac, flushed down drains and out into the water supply. The concentrations tend to be very low—less than one part per trillion, in some cases—but nobody can say for sure whether they're low enough to be safe.

So the U.S. Geological Survey (USGS), which did last year's study, is out in the field again this summer. Scientists are pouring nontoxic red dye into streams in Iowa and Colorado to study how water flow disperses pollutants. The next step, says Dana Kolpin, the research hydrologist who is coordinating the project, will be to go back and measure the concentrations of various drugs and industrial chemicals. Some of these substances, he says, may disappear faster than the dye test would predict—perhaps because they degrade quickly or bind to sediments in the stream bottom. Others may disperse more gradually, and those are the ones that treatment-plant operators should concentrate on removing.

Once they have figured out how the dozens of compounds on their list are dispersed, USGS and other scientists will address the question of how dangerous they are to human health—research that should take several more years. "We have no evidence that these chemicals are harmful at these levels," says Kolpin. "But we also have no proof that they aren't." —M.D.L.



JASON J. SMITH—U.S. GEOLOGICAL SURVEY

FLOW CHART: Red dye shows scientists how pollutants move through streams

TIME, AUGUST 25, 2003

Effects on Aquatic Organisms: Cause for Concern

- **Aquatic exposure – chemicals in the aquatic environment can result in continuous, multigeneration exposure.**
- **Feminization of fish - link to estrogen exposure?**

  Ex: Boulder Creek, CO: female white suckers outnumber males by > 5 to 1; 50% of males have female sex tissue
  (David Norris, Univ. of Colorado at Boulder)

- **Effects of antidepressants on fish and frog development?**

  Ex: Lab studies show low levels of common anti-depressants, including Prozac, Zoloft, Paxil and Celexa, cause development problems in fish, and metamorphosis delays in frogs
  (Marsha Black, Univ. of Georgia)

Medicines in the Environment

USGS/CDCP study of drinking water facility

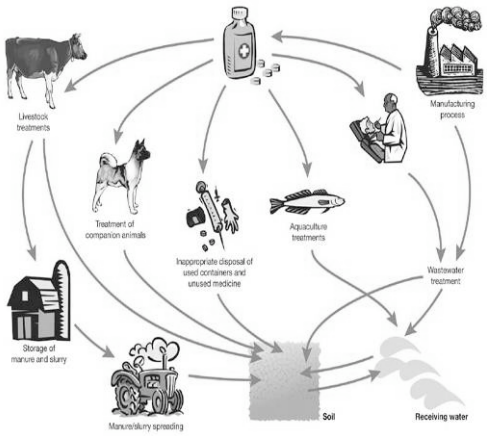
- Analyzed for 106 contaminants in 24 water samples from locations within a drinking-water-treatment facility and the 2 streams serving the facility
- 40 contaminants detected in 1 or more samples of stream water or raw-water supplies in the plant
- 34 contaminants detected in >10% of these samples
- Some prescription and non-prescription drugs and their metabolites were detected in finished water

Stackleberg, P.E. et al. 2004. "Persistence of pharmaceutical compounds and other organic wastewater contaminants in a conventional drinking-water-treatment plant." Science of the Total Environment. 329:99-113.

2008 Associated Press Series

- Antibiotics, anti-convulsants, mood stabilizers hormones - in the drinking water supplies of at least 46 million Americans
- **Detected in drinking water supplies of 24 major metropolitan areas**
- NJ drinking water plant (serving 850,000 people): metabolized angina meds & carbamazepine
- Washington DC: 6 meds in drinking water
  - ⇨ IL has followed up with their own studies

Entry Pathways of Medicines into the Environment



- Outflow from wastewater treatment plants
- Surface application of manure and biosolids
- Commercial animal feeding operations and aquaculture
- Landfill leachate sent to wastewater treatment plants
- Septic systems

Source: www.york.ac.uk/.../ gsp/esm/images/pharma1.jpg

Pharmaceuticals and Personal Care Products (PPCPs)

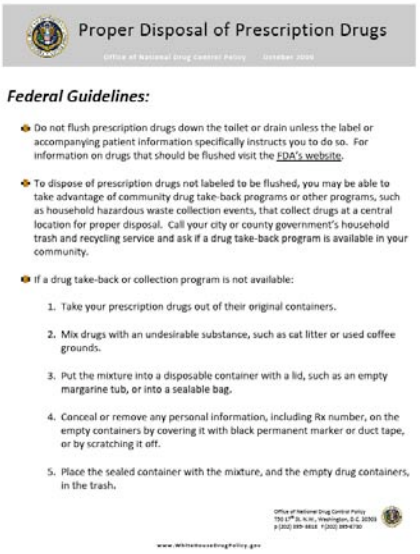
- Degrade relatively rapidly in the environment
- Show low bioaccumulation in biota
- Do not “biomagnify” through food chains
- Generally, are not acutely toxic

BUT

- May have biological effects at very low doses
- May be “pseudo-persistent” contaminants

Federal Guidelines

http://
www.whitehousedrugpolicy.gov
/publications/pdf/
prescrip_disposal.pdf



Proper Disposal of Prescription Drugs

Office of National Drug Control Policy — October 2009

Federal Guidelines:

- Do not flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so. For information on drugs that should be flushed visit the FDA's website.
- To dispose of prescription drugs not labeled to be flushed, you may be able to take advantage of community drug take-back programs or other programs, such as household hazardous waste collection events, that collect drugs at a central location for proper disposal. Call your city or county government's household trash and recycling service and ask if a drug take-back program is available in your community.
- If a drug take-back or collection program is not available:

1. Take your prescription drugs out of their original containers.
2. Mix drugs with an undesirable substance, such as cat litter or used coffee grounds.
3. Put the mixture into a disposable container with a lid, such as an empty margarine tub, or into a sealable bag.
4. Conceal or remove any personal information, including Rx number, on the empty containers by covering it with black permanent marker or duct tape, or by scratching it off.
5. Place the sealed container with the mixture, and the empty drug containers, in the trash.

Office of National Drug Control Policy
750 17th St. N.W., Washington, D.C. 20503
p (202) 395-6618 f (202) 395-6730

www.WhiteHouseDrugPolicy.gov

Medicine Waste Management Issues and Barriers

- Communicating the issue
- Lack of conclusive research
- Safe disposal
- Controlled substances - DEA
- Funding for staff, disposal & publicity
- Privacy of medical information
- Misinformation
- Convenience

Challenges of Stewardship Programs

- DEA prohibition on accepting narcotics unless law enforcement is present and all controlled substances are documented results in labor-intensive events
- Funding
- Developing partnerships across many public agencies & private sector
  - law enforcement; pharmacies, water utilities, watershed orgs
- Responsibility is taken off the manufacturer of the medicines

IL-IN Sea Grant Resource Kit:

Disposal of Unwanted Medications

A Resource for Action in Your Community

http://www.iisgcp.org/unwantedmeds/

Purpose: Guide for communities who are looking for a solution for their drug disposal problem

Use: Solid waste officials, county and state officials, community groups, environmental and community organizations, pharmacists, researchers

Sucesses: Educated thousands of individuals on the issue, supported several outreach campaigns for communities holding events, created new networking groups

IL-IN Sea Grant Resource Kit:

Disposal of Unwanted Medications

A Resource for Action in Your Community

http://www.iisgcp.org/unwantedmeds/

Content

1. **Introduction to the issue**
2. **Case Studies of Take-Back Programs**
3. **How to Hold a Collection Event**
4. **Materials for Public Outreach and Education**
5. **Pharmaceutical Donation/Take-Back Legislation**
6. **International Policy on Medicine Donations**
7. **Bibliography on Pharmaceuticals, the Environment, and Human Health**
8. **PowerPoint Presentation**

IISG Co-sponsored Workshops

- Illinois Counties Solid Waste Management Association (2007,08,09): *Collection of Unwanted Medications: A Training Workshop for Illinois Communities*
- Indiana Household Hazardous Waste Task Force, Inc. and Indiana DEM (2007 & 2009): *A Workshop for the Collection of Unwanted Medications in Indiana*
- Michigan DEQ, MI Sea Grant & IL-IN Sea Grant (2008): *Unwanted Medicine Disposal: Doing it the Right Way*
- Distributed ~500 toolkits plus 10,000's online visits

Types of Stewardship Activities

- One-time consumer collection events
- Short-term collection campaigns
- Permanent collection locations
  - On-going one-day events
  - Collection boxes at pharmacies
  - Police stations
  - HHW facilities
- Mail-back programs
- Education

Unwanted Medication Collection Initiatives

- Local take-back programs & pilots across the country
- Pharmwaste **http://lists.dep.state.fl.us/cgi-bin/mailman/listinfo/pharmwaste**
- Product Stewardship Institute **www.pruductstewardship.us**
- Hospitals for a Healthy Environment: blueprint for hospital pharmaceutical waste management nationwide
- Teleosis Institute (CA) data gathering and outreach

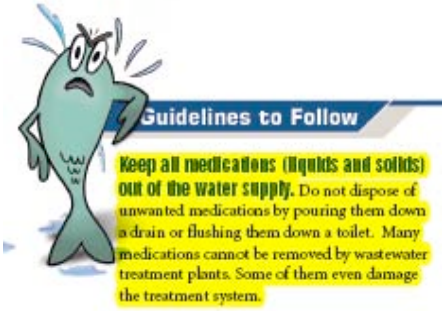
Components of a Successful Collection

- DEA goal
  - Avoid diversion
- Comply with State regs
  - Board of Pharmacy
  - Dept. of Health
- Educate the public, health professionals, & pharmacists
- Involve pharmacists/Police

What's Happening in Indiana?

Indiana DEM has created a brochure and website to advise residents on medicine disposal

http://www.in.gov/recycle/6141.htm



Allen County TRIAD

Numerous medicine collections have been organized locally by the TRIAD programs, partnerships between law enforcement and senior citizens' organizations.

Marsh Pharmacy Store Collections (state-wide)

MARSH
SUPERMARKET & PHARMACY

Saturday, October 3, 2009 9AM - 5PM

Sunday, October 4, 2009 11AM - 5PM

Partners: Indiana Department of Environmental Management, the Indiana Poison Center, CLS/Med-Turn & Statewide Medical Services

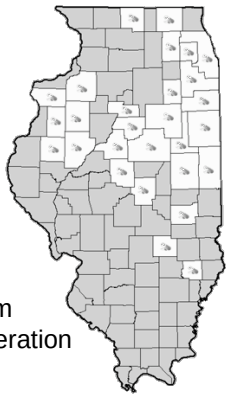
http://www.marsh.net

Go Greener 'Med Drop'

West Lafayette, IN
September 16, 2009

- 55 gals of unwanted medicines collected in 3.5 hrs!
- Controlled substances accepted
- Partners:
  - WL Go Greener
  - WLPD
  - Wildcat Creek Solid Waste Dept.
  - Purdue University

What's Happening in Illinois?



Chicago

- 4 annual events, 25 Chicago sites, spearheaded by Chicago Police Dept.
- Targeted older citizens; Since 2004: 6,000 lbs of medicines collected; now containers at 5 Chicago Police Stations

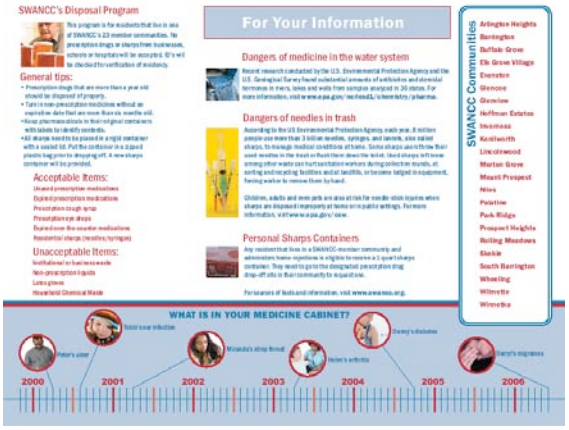
Sangamon County (Springfield)

- Annual HHW events ~50 barrels of meds diverted from waterways and landfills; properly disposed of by incineration

Other areas in Illinois

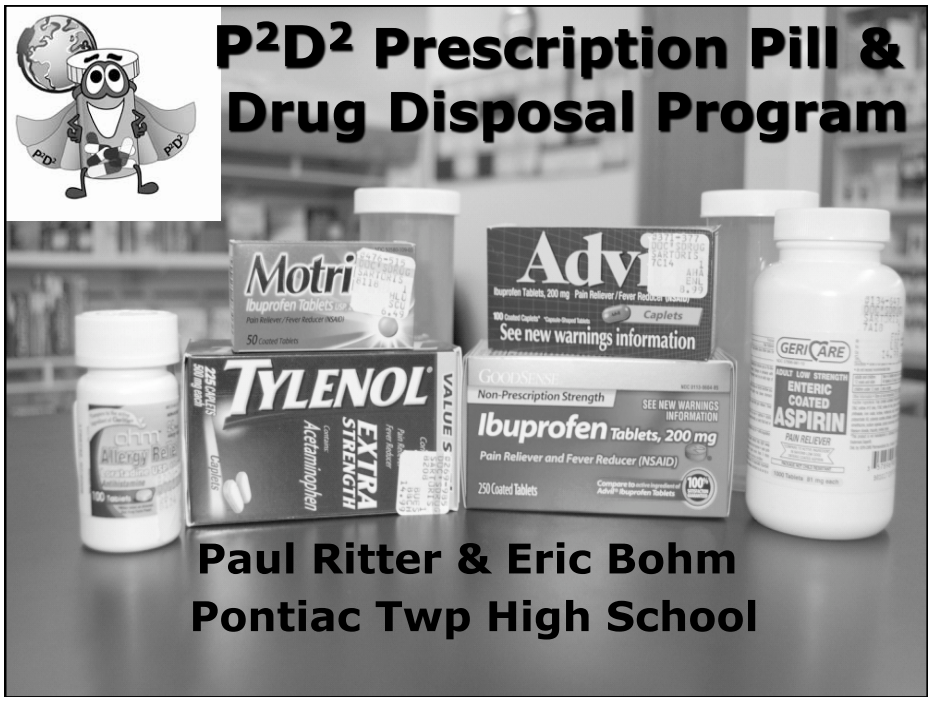
- Will County (700,000 people) - pharmacies (non-controlled only)
- Kendall County (100,000 people) - Yorkville police station
- Many others (22 counties) through P2D2 Program
- http://www.epa.state.il.us/medication-disposal/locations/index.html

Solid Waste Agency of Northern Cook County (SWANCC) Illinois



Pilot Program

- Serving about 23 municipalities and 1 million northern Cook County Residents
- Collecting meds and sharps at City Halls
- Paid for by revenue from transfer station
- Program costs expected to be about ~$100K for program ($0.10 per person)


P²D² Prescription Pill & Drug Disposal Program
Motri
Ibuprofen Tablets
50 Coated Tablets
Adv
Caplets
See new warnings information
TYLENOL
EXTRA STRENGTH
Acetaminophen
GOODSENSE
Non-Prescription Strength
SEE NEW WARNINGS INFORMATION
Ibuprofen Tablets, 200 mg
Pain Reliever and Fever Reducer (NSAID)
250 Coated Tablets
GERI CARE
ENTERIC COATED ASPIRIN
PAIN RELIEVER
Paul Ritter & Eric Bohm
Pontiac Twp High School


PONTIAC PRESCRIPTION DRUG DISPOSAL PROGRAM
Do you have unused prescription drugs?
STOP
Dispose of them properly at no cost at the following Pontiac sponsors...
Walgreens
Wal-Mart
K-Mart
Sartoris Drugs
MR. RITTER'S ECOLOGY & MR. BOHM'S ILLINOIS CLASSES PONTIAC HIGH SCHOOL
Got Old Meds?
Drop off your expired or unused medications at the following locations:
• Eastland Pharmacy at OSF St. Joseph Medical Center
• Merle Pharmacy at Bromenn
• Ryan Pharmacy
• Doc's Drugs, LeRoy
www.P2D2program.org
Sea Grant
P²D²

IISG Education and Marketing

- Curriculum
- 4-H
- Service Learning
- Integration of “do not flush” message into displays, games brochures
- Newsletters, media, articles, etc.

❖ New Sea Grant education resource provides background information for h.s. teachers and students, including sample community stewardship activities.

❖ Students who take part in activities will be equipped to help people make conscientious decisions when disposing of medications .

The Medicine Chest

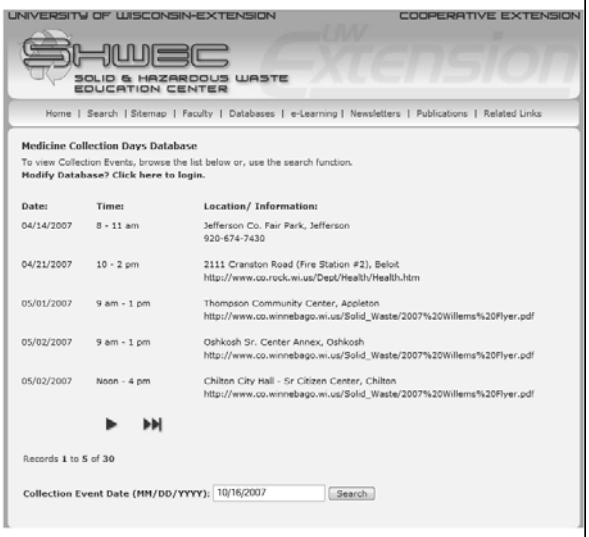
A collection of safe disposal curriculum activities and educational resources

WISCONSIN
Pharmaceutical Waste Working Group

- Formed in 2006 as one day consumer collection events were beginning
- Cross section of stakeholders
- Focused on 3 areas
  - Supporting information and educational outreach
  - Improving data collection
  - Developing pilot program models

WI: Data Collection

- Identifying new collection programs and aggregating results
- Providing data collection tools
- Developing database of results



Fox Cities Case Study

Upon arrival, participants completed a brief survey providing their zip code, how they heard about program, and basic reasons for not using the medication

Fox Cities Case Study

All meds received were sorted, categorized, identified, and recorded. This took a significant labor force.

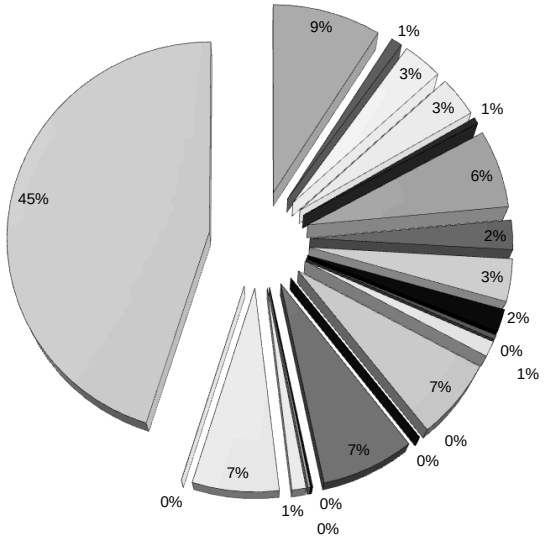
Fox Cities Case Study

of participants and medications collected

	Appleton	Chilton	Little Chute	Oshkosh	Waupaca	Totals
	177	43	55	207	108	**590 participants**
Controlled Substances (# of pills)	11194	1980	1677	6115	2975	**23,941 pills**
Non-controlled substances (pounds of OTC and prescription medicines)	396	101	94	423	225	**1,229 pounds**

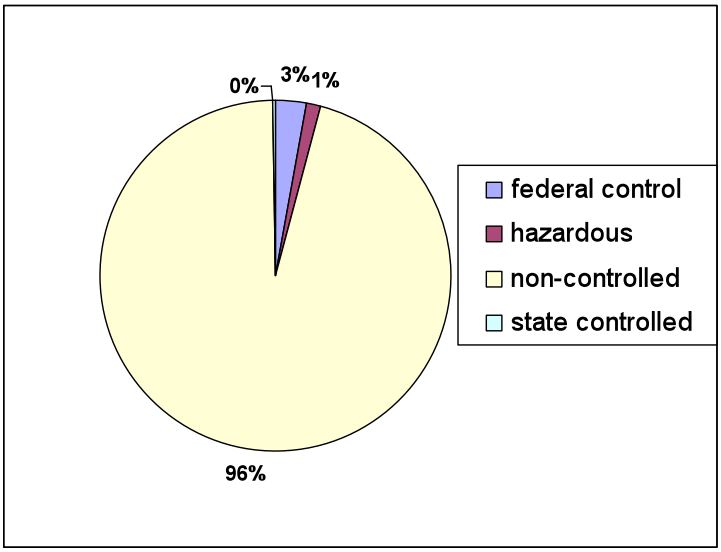
Therapeutic Classes

Quad Counties May 2007

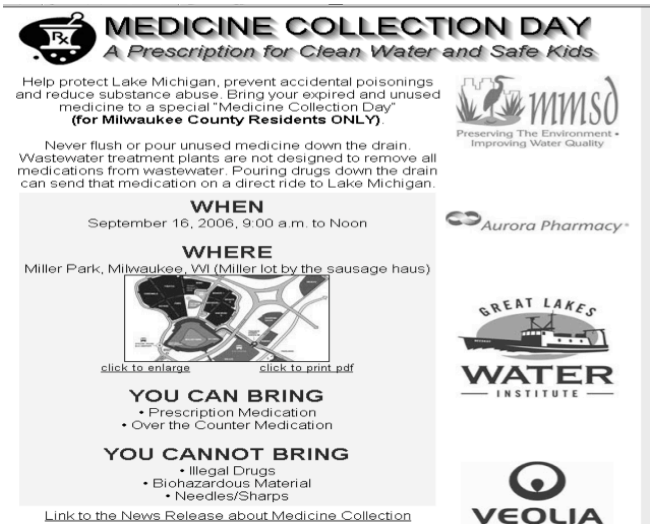


- analgesic
- antihistamine
- antihyperlipidemic
- anti-infective
- cough & cold
- diabetes
- diuretic
- gastrointestinal
- hemostatic
- hormone
- musculoskeletal
- neurological
- ophthalmic preparations
- overactive bladder
- psychotherapeutic
- respiratory
- sedative
- thyroid
- vascular
- veterinary use anti-emitic
- misc

Management Results



Wisconsin Initiatives: Collection Events 2006,07,08,09



Cool Facts

Controlled substances:

10,472 pills

Oldest medication:

1925

Mail back programs

- Maine - Disposal of Unwanted Medications Pilot
  - Designed to meet Maine legislation
  - Unique situation - State DEA accepting unwanted medicines (including controlled substances)
  - Pharmacies to provide for mailer pick up and drop off
  - Phase I – Spring 2008; 4 counties; no marketing
  - Phase II – Fall 2008; statewide; marketing campaign
- Wisconsin Pilot launched on Earth Day
  - Includes Reverse distribution company
  - Partnering with/direct contact with all pharmacies

Madison WI, WI color-coded bags

pharmacy **senior centers** **June collection event**

Pennsylvania Initiatives:
Keep Unwanted Medicine out of Lake Erie

The City of Erie, Pennsylvania
Joseph E. Sinnott, Mayor

Erie Times-News In Education

LECOM
COLLEGE OF OSTEOPATHIC MEDICINE
SCHOOL OF PHARMACY

EARTH FORCE

Erie Green

Sea Grant
Pennsylvania
www.seagrant.psu.edu

ECSR Environmental Coordination Services and Recycling
Comprehensive Waste Management Services

Methods of Outreach

- NIE full page articles
- Surveys
- Erie Green Campaign
- News Coverage
- Posters/Postcards
- Pharmacy slips
- Partner websites/ newsletters
- Partner meetings and events
- WQLN public service announcement
- Press Event

Public Response and Perceptions

- Event Survey
  - Participants requested more collection events
  - 30% of participants had never heard about pharmaceuticals in the water before the event, and many didn't realize it was affecting the lake.

Collection Results

- 87 participants
- 89% over the age of 46
- 600 pounds of material (120 gallons)
- 5 of the 120 gallons controlled substances
- 3,839 controlled pills
- 69,232 non-controlled pills
- 384 personal care products

Unused Patient Medication Disposal

Approximately 4 billion prescriptions are filled in the United States annually, and it has been estimated that as much as 35% of the dispensed medication goes unused, resulting in over 200 million pounds of pharmaceuticals which can adversely affect the environment if disposed of improperly.

- TakeAway™ Envelope
- 10 Gallon TakeAway™ Community Environmental Return System

What is Still Needed?

Research:

- Excretion vs. disposal (Daughton study); veterinary and human-feedlots (CAFOs)
- Humans, pets, livestock will always be taking meds, so solutions at the WWTP are needed for the long run
  - Impact of designer medications
- Curb medicine waste and over-prescribing
- Education and outreach
  - Provide simple solutions for individuals, MDs, pharmacies, hospitals (VA), hospices, rehab centers, schools, etc.

To Learn More

www.unwantedmeds.org

Laura Kammin, lkammin@illinois.edu

More info: http://www.epa.gov/ppcp/

Thank you to: U.S. EPA GLNPO for funding for this work and Shelley Cabrera for help with the toolkit and outreach

Disposal of Unwanted Medicines:
A Resource Kit for Action in Your Community

Toolkit Feedback Form

Your opinion is important to us! In order to maximize the effectiveness of this guide and any future theme materials, we would like to know how helpful this guide is to you. Please take a moment to review this form and share your first impressions on using the guide. Your prompt feedback will help us design future tools for groups like yours around the Great Lakes Basin.

Thank you for taking the time to give us your feedback.

Will this guide be useful to you and/or your organization?
☐ Very useful
☐ Somewhat useful
☐ Not useful

Will you utilize the guide most in: (please check all that apply)
☐ Hard copy format
☐ CD-ROM
☐ On the internet (*toolkit contents posted at http://unwantedmeds.org*)

Were the case studies a relevant tool for you and/or your organization?
☐ Very relevant
☐ Somewhat relevant
☐ Not relevant

Were the case studies explained clearly enough to be useful to you and/or your organization?
☐ Yes, very clear
☐ Somewhat clear
☐ No, not clear

Do you plan on adapting the outreach information in the toolkit for your organization's use?
☐ Yes, we can edit the examples provided
☐ Unsure how/if we will use them
☐ No, we will develop our own or already have outreach materials
☐ No, we will not be conducting education and outreach

What guide topic will be most helpful to you and/or your organization?

How are you/your organization most likely to use this guide?

(Continued on back page)

On the issue of unwanted medicine disposal, who do you think is the most effective audience for us to address with future outreach efforts?

☐ Local governments
☐ Tribes
☐ Waste Management Officials
☐ Communities
☐ Students
☐ Other (please specify)_____

Do you have any other comments/suggestions about the guide?

What future pollution prevention themes would you like Illinois-Indiana Sea Grant to undertake?

Contact Information: (please print legibly)

Name:_____ Phone: _____ E-Mail:_____

Organization:_____

Street Address: _____

City: _____ State:_____ ZIP:_____

Mail to:
Laura Kammin
Illinois-Indiana Sea Grant
370 NSRC, MC-635
1101 W. Peabody Dr.
Urbana, Illinois 68101

-*OR*-

Email evaluation to:
Laura Kammin – lkammin@illinois.edu