

Properly Disposing of Unused Medicines

*How expired medicines
can pose a threat*

Expired medicines can pose a threat to individuals and the environment if proper guidelines are not followed to dispose of them safely.

By Sarah Dewey

Does your medicine cabinet contain so many prescription bottles that you don't know which is the right medicine? Or, do you have a shelf (or drawer) for medicines you take every day, one for medicines you take sometimes and yet another for those you took a while ago? This may sound familiar to individuals with immune deficiency and autoimmune diseases.

Currently, 91 percent of seniors and 61 percent of non-elderly adults rely on a prescription medicine on a regular basis. The average American received more than 11 prescriptions in 2006, adding up to 3.3 billion prescriptions in the United States for one year. And these numbers don't include all the prescription and nonprescription drugs that are stockpiled in home cabinets — medicines that are expired or that are no longer needed for a variety of reasons.

Unneeded and expired medicines in homes may not seem like a problem to many, but they pose a great risk. For starters, they can be accessed by individuals to whom they can cause harm, such as children and grandchildren. Accidental pharmaceutical ingestion is the most common poison exposure category. In 2006, Poison Control Centers reported about two million cases of unintentional poisonings or poison exposures, and the Centers for Disease Control and Prevention reported that pharmaceuticals caused 95 percent of the unintentional and undetermined poisoning deaths.

Intentional misuse of pharmaceuticals stored in homes must also be considered. A study by the National Center on Addiction and Substance Abuse found that between 1992 and 2003, the number of Americans who abused pharmaceuticals had nearly doubled from 7.8 million to 15.1 million. In addition, prescription drug abuse among teens more than tripled during this time. Much of this abuse appears to be the result of easy access to prescription drugs — as easy as a loved one's medicine cabinet.

The question is: What are people supposed to do with all these unwanted medications?

Only Rain in the Drain

In the past, people have been directed to throw unwanted and expired medications down the toilet. This is not recommended! Medication that is flushed often travels from the toilet to a wastewater treatment plant where it is mixed with bacteria. The bacteria's job is to eat solid waste and break it down so that the water is clean enough to enter into a flowing stream or river. Because the wastewater is not treated for any chemicals or medicines, flushed antibiotics can kill the beneficial bacteria that are "on the job."

Medicines that are flushed down toilets that are connected to a septic system go directly to wastewater and groundwater. After flushing, the solids go to a holding tank, where they are food for bacteria, and the liquids are sent into a drain field, a buried area in the

Do-It-Yourself Disposal of Medicine



1. Remove medicine from prescription container.
2. Obscure or remove any medical and personal identifying information on the prescription container. If possible, recycle the container or include with the trash.
3. Mix medicine with unreactive material, such as dry coffee grounds or cat box filler. For best results, break up pills or capsules before mixing.*
4. Place mixture into a sealable container, such as an empty margarine container or plastic bag.
5. Put mixture in container or bag in with the trash.

* Note: Some websites that are not authorized by the United States Environmental Protection Agency recommend mixing dry pills with liquid medicine and water until the pills have dissolved, and then adding coffee grounds or cat box filler. Adding some liquid to the crushed pills is all right, but only an amount that the solid can absorb, thereby leaving the material dry.

Liquids should never go to the landfill! Once at the landfill, liquids can interact with other materials, possibly dissolving some unwanted chemicals, and then leaching down to the bottom of the landfill. There, the liquid meets the landfill liner. If the liner is intact, liquids are collected and sent to the wastewater treatment center, which is exactly where pharmaceuticals do not belong. Or, if the liner is broken, the liquids will enter into the groundwater — possibly becoming someone's drinking water.

yard that soaks up the liquids. Any chemical that is dissolved in the liquid in the drain field leaches into the groundwater.

Since 2007, more than 100 individual pharmaceutical medications, including antibiotics and steroids, have been identified from environmental samples and drinking water taken from locations throughout the United States. Many of these are chemicals of environmental concern, especially to aquatic animals, since they are constantly bathed in a diluted solution of whatever mixture we all



Pharmaceutical Take-Back Programs

Many communities and states are collecting and removing pharmaceuticals. Here is a sampling of pharmaceutical take-back programs.

- Maine has the first statewide pharmaceutical collection program. Maine citizens obtain an envelope from local pharmacies, medical facilities and community agencies for their unwanted pharmaceuticals. They then return the envelope, confidentially and free of charge, to the Maine Drug Enforcement Agency. The state's pilot program collected 1,000 pounds of medicines from 2,000 participants.
- Washington state citizens left their unwanted pharmaceuticals inside a sealed-box structure that was located inside a pharmacy and constantly monitored to prevent break-ins. Over 13 months, 6,000 pounds of pharmaceuticals were collected.
- In two years, the San Mateo County (Calif.) Police Chiefs and Sheriffs Association managed 13 drop-off sites inside their offices, where they collected more than 9,190 pounds of unused medications. For their innovative program, they received the California Governor's Environment and Economic Leadership Award.
- A recent take-back program in San Francisco found the average household had 2.7 pounds of unwanted or expired drugs

flush down the drain! Some medication ingredients are known to affect animal reproduction, development and immune systems, as well as contribute to the evolution of antibiotic-resistant bacteria.

Disposal Solutions

So, if prescription medicines can't be flushed (unless the medicine bottle instructions specifically say to do so), how can they be disposed of? Estimating more accurately how

much medicine is needed when filling prescriptions is the best way to avoid having leftovers. Sample medicines or new prescriptions could be started in smaller amounts, with refills as needed. Antibiotics should be taken until the medicine is finished, unless there are complications. And, while those with chronic illnesses often get more of a medicine than is really needed for those "just-in-case" situations, this should be done only if absolutely necessary.

For expired and unwanted prescription medicines, the best disposal method is to take them to pharmaceutical take-back programs, which are typically sponsored by the clean water or hazardous waste departments in each state, county or municipality. These programs may be part of a one-time event or a permanent collection site, and they can be found by asking local solid waste departments or by checking online at www.epa.gov/epawaste/wyl/stateprograms.htm. In addition, the Earth 911 website (earth911.com/hazardous/medications) lists medication recycling programs for each state.

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All medications gathered by these programs are treated as hazardous waste. While households are exempt from hazardous waste regulations, some products contain ingredients with hazardous properties, which are defined as flammable, corrosive, reactive and toxic. Prescription medicines can be hazardous due to their toxicity to people and the environment. Medications that are collected from take-back programs are often taken to a hazardous waste incinerator, where they are burned at high heat so that the chemical bonds are broken or the chemical structures become smaller, or where they are reduced to their elemental state (such as carbon, oxygen and hydrogen).

The third option is to “do it yourself.” In February 2007, the White House Office of National Drug Control Policy issued the first consumer guide for the proper disposal of prescription drugs, titled *How to Dispose of Unused Medicines*. The guide’s main goal is to urge

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people to separate medicines from the prescription bottle so that scavengers looking through trash cans can’t pull out intact and identified pills. Another goal is to show people how to make medicines unconsumable by others by mixing them with cat box litter or dry coffee grounds. (See the Do-It-Yourself sidebar on page 21.) These mixtures will likely go to sanitary landfills, depending on an area’s waste removal program. At sanitary landfills, trash is covered with soil at the end of the day so that it is no longer exposed to air or water. In addition, sanitary landfills are typically lined with an impermeable layer to prevent liquids from leaking into the groundwater.

Disposal Safety Protects Everyone

By following these safe guidelines for disposing of expired or unused medicines, everyone wins. When medicine cabinets are emptied of their clutter, it is much more than an exercise in cleanliness. Toxic chemicals are kept from entering into the food web of the world’s ecosystem, which we all are a part of — ourselves, our kids and our grandchildren. ■

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Disposing of IG Supplies and Bottles Used at the Home

Since immune globulin (IG) medicines are infused in households by individuals, the waste produced is not regulated. Nevertheless, patients should follow the lead of professionals and treat these supplies as they would be treated at hospitals or infusion centers.

- Place used supplies, empty and partially full bottles of IG and any materials that come in contact with IG or bodily fluids, such as blood, in a “Sharps” or “medical waste” container at the end of the infusion.
- Keep Sharps containers closed.
- Keep Sharps containers out of the reach of children and pets.
- The pharmacy that provides the supplies probably will pick up and replace the container when it is full.

Note: Some state and local health departments allow used needles and empty IG bottles to be placed in the trash if they are in a sealed and labeled container. However, individuals will need to contact their respective agencies to find out what their local regulations allow.

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