

CHAINS & BUSINESS

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Pharmaceutical waste: A public health challenge



You are the pharmacist on duty at a community pharmacy and a patient asks you, "What should I do with my unused medications?" Do you know the answer?

Improper waste management affects both the environment and public health, so it is important to know the regulations governing pharmaceutical waste and to teach patients how best to dispose of unused drugs.

The Environmental Protection Agency (EPA) is the federal agency that enforces the 1976 Resource Conservation and Recovery Act (RCRA) governing the regulation of solid and hazardous wastes from its generation to disposal. A solid waste may be a solid, liquid, or gas. A material must be a solid waste before being considered hazardous waste and includes any pharmaceutical product that is no longer needed.

Hazardous pharmaceutical wastes are deemed unsafe to the environment and must go through a specialized disposal process to prevent their introduction into sewers and landfills. Hazardous wastes include drug products and any containers that held drugs. EPA categorizes hazardous drugs under the P-list (acutely toxic), U-list (toxic), or D-list (chemical characteristics of ignitability, corrosivity, reactivity, or toxicity). Hazardous wastes must follow federal EPA regulations in accordance with RCRA; however, state EPA regulations may be more stringent than federal EPA regulations.

What are the proper ways to dispose of pharmaceutical wastes? Healthcare systems and community pharmacies should have protocols in place for appropriate handling of hazardous and nonhazardous drug wastes. If RCRA and state regulations permit, nonhazardous items may be solidified and placed in a landfill; however, the possible effect of these wastes on the environment and public safety is unclear.

A better way to manage nonhazardous wastes is by processing them as hazardous drugs. Prior to landfill disposal, hazardous pharmaceutical wastes must undergo a physical or chemical change rendering them chemically inert. Many healthcare facilities use municipal or medical waste incinerators to dispose of pharmaceutical wastes, which are then placed in a landfill. For pharmacies, a licensed reverse distributor can return unused but potentially usable pharmaceuticals to manufacturers for credit, or they may be properly disposed of as items deemed unreturnable by RCRA standards.

The role of pharmacy

Pharmacists are in a prime position to teach patients how to manage their unused medications and to encourage them to take precautions when disposing of pharmaceutical wastes. When feasible, community drug take-back programs collect unused or unwanted medicines at a central location for proper disposal in compliance with federal, state, and local regulations. If take-back programs are not available, individuals should follow guidelines set forth by FDA and Office of National Drug Control Policy. These guidelines instruct patients to dispose of unused medicines either according to the drug label or by

mixing the drug with an undesirable substance (e.g., kitty litter) that is then placed in a leakproof bag or container and discarded.

Adverse effects

Many drug products from pharmacies and health systems wrongfully end up in the trash or go down the drain and into the sewage system. Because sewage treatment facilities are unable to manage and remove pharmaceutical contaminants from our water, there is potential for adverse effects on water quality, aquatic life, and human health and development.

Toxicity from chemical mixtures is possible, as is increased risk for cancer occurrence, endocrine disruption, and antibiotic resistance.

Both healthcare professionals and consumers have an obligation to properly dispose of drugs to protect the environment, ensure public health, and prevent diseases resulting from pharmaceutical wastes. **DT**



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