

## **SWANA TECHNICAL POLICY T-10 SAFE DISPOSAL OF UNUSED OR EXPIRED HOUSEHOLD PHARMACEUTICALS**

### **I. Background**

Historical disposal of pharmaceuticals has consisted of flushing them into the municipal wastewater treatment system in toilets and drains. During the past decade, enhanced analytical techniques have detected an increasing number of chemicals, including common pharmaceutical compounds, in the environment at low concentrations. In 2002, the U.S. Geological Survey sampled streams in 30 states. Of the 139 streams tested, 80 percent had measurable concentrations of prescription and nonprescription drugs, steroids, and reproductive hormones. Further, pharmaceuticals have been found in the drinking water of 24 major metropolitan areas affecting 41 million Americans. Exposure to even low levels of drugs has been suggested by scientists to have negative effects on fish and other aquatic species, and also may negatively affect human health.

The public's desire for safe and environmentally protective disposal of unused pharmaceuticals has grown as it becomes aware of the prevalence of these compounds in the environment. Of equal or greater concern is the increased diversion and abuse of unused or expired medication stored in home medicine cabinets, with particular concern about inadvertent poisonings. While the severity of the potential threat to the environment from the release of such pharmaceutical compounds is still being debated, the public health and safety issues related to abuse and poisoning are seen as highly problematic and in need of immediate solutions.

A small number of state and local governments, working with the private sector and product stewardship organizations have developed take-back programs to centrally collect and dispose of consumers' unused prescription drugs and other medications. However, restrictive federal and state rules covering management and disposal of controlled substances (primarily pharmaceutical narcotics) have complicated such programs by requiring advance approval by the federal Drug Enforcement Administration (DEA) and the presence of law enforcement officials to receive unused controlled substances from the public.

In October 2010, President Obama signed into law the "Secure and Responsible Drug Disposal Act", S. 3397, which for the first time authorizes the DEA to write new regulations that will allow a legal user of a pharmaceutical controlled substance to deliver unused controlled substances to another individual or business entity for disposal purposes. Whom that individual or entity will be and what the final Controlled Substances Act (CSA) regulations will look like is currently unknown.

Once the CSA regulations are finalized, the solid waste industry can assist in providing responsible disposal of unused household pharmaceuticals by offering secure and environmentally protective alternatives such as:

- Product stewardship, take-back programs which are compliant with the Federal Controlled Substances Act;
- Destruction by medical waste incineration (MWI);
- Destruction by waste-to-energy (WTE) facilities; and
- Secure disposal in a Subtitle D Municipal Solid Waste (MSW) Landfill.

## II. Discussion

### **Product Stewardship and Pharmaceutical Take-Back Programs**

The pharmaceutical industry, retail pharmacies, and local solid waste agencies can develop effective stewardship and pharmaceutical take-back programs. The ideal pharmaceutical take-back program will have the following characteristics:

- Be convenient;
- Be safe (both from a physical and a diversion perspective);
- Cost effective;
- Available to the entire population, including the disabled or home-bound; and
- Inventory collected pharmaceuticals in order to provide a sample set of data to enable reduction of unwanted drugs in the future

To achieve these goals, well-designed take-back programs will most likely include the following aspects:

- Multiple drug return options such as kiosk drop boxes in pharmacies and other convenient locations, mail-back containers, and community events for scheduled drop-off;
- Use of existing transportation infrastructure such as USPS, FedEx, and UPS to provide cost-effective logistics;
- Disposal of returned household pharmaceuticals by incineration at a permitted MWI or WTE facility will be significantly less costly than disposal at a hazardous waste incinerator;
- Regulatory criteria for program approval, performance and oversight to ensure that ultimate disposal is secure and environmentally protective; and
- Return options that are compliant with the Federal Controlled Substances Act.

### **Destruction by Medical Waste Incineration (MWI)**

In states and communities that have developed take-back programs to collect and destroy unused pharmaceuticals, MWI is a safe and effective disposal option. Medical waste incinerators are permitted to destroy the biohazardous waste generated by hospitals, clinics, doctors and dentists, and veterinary clinics in the diagnosis and treatment of patients. Non-hazardous pharmaceutical wastes may also be safely disposed of by MWIs with appropriate state permits. MWIs are stringently regulated under the Federal Clean Air Act, which requires sophisticated air quality control equipment to minimize air emissions. The United States Environmental Protection Agency (USEPA) has excluded consumer-generated pharmaceutical waste from the Resource Conservation and Recovery Act regulations for hazardous waste management and disposal. Most states maintain this exclusion, enabling MWI incineration as a cost-effective method of disposal. States currently requiring hazardous waste disposal should be encouraged to re-examine their position to encourage maximum use and cost-effectiveness of take-back programs.

## **Destruction by Waste-To-Energy (WTE) Facilities**

WTE facilities are subject to stringent environmental standards and employ sophisticated air quality control equipment. As a result of the controls employed at these facilities, dramatic reductions in emissions have been achieved (reducing dioxin and mercury emissions by 99% and 97% respectively) leading the USEPA to conclude that WTE generates electricity with “less environmental impact than almost any other source of electricity.”

Consumers in communities served by a WTE facility can confidently dispose of their unused pharmaceuticals in household trash, which will be safely and effectively destroyed. WTE facilities can also serve as a safe disposal destination for consumer drug wastes collected through consumer take-back programs, assuming they are properly permitted and the state accepts the USEPA exclusions for consumer-generated hazardous waste.

## **Secure Disposal in a Subtitle D Municipal Solid Waste (MSW) Landfill**

In the absence of organized consumer pharmaceutical take-back programs, unused drugs will likely be discarded in household trash for ultimate disposal in Subtitle D-regulated MSW landfills. Only very limited data exist on the mass of pharmaceutical waste that is expected to be disposed of in landfills. In 2007, Musson and Townsend conservatively estimated the possible amount of consumer pharmaceuticals disposed in landfills in the U.S. at between 1,259 and 7,555 tons per year. To put this in perspective, a recent estimate by *BioCycle* Magazine and Columbia University, “The State of Garbage in America” indicated that 266,412,964 tons of MSW were landfilled in 2006, and 28,394,109 tons per year were combusted in WTE plants.

Various studies have been conducted by the pharmaceutical industry and USEPA analyzing the environmental fate of unused medicines disposed in household trash and sent to MSW landfills. These data suggest that there are very low levels of active pharmaceutical ingredients (APIs) in landfill leachate, which are currently unable to be measured confidently by current analytical equipment. Studies of the environmental fate of pharmaceuticals disposed in MSW landfills with liners have further concluded that is the quantity of landfill leachate leaking to groundwater and surface water is negligible. These findings suggest that encouraging the disposal of unused medications in MSW landfills will decrease surface water discharges of active pharmaceutical ingredients that are caused by flushing unused medications into publically operated sewage systems.

### **III. Policy Position**

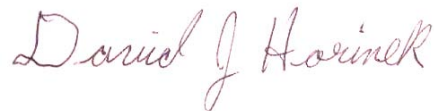
SWANA, as an organization of solid waste professionals, supports the following policy positions on responsible disposal of unused or expired pharmaceuticals:

- Take-back programs are currently not common throughout the U.S., but may be implemented by many agencies with the implementation of new federal legislation. Where take-back programs are not available, solid waste agencies should instruct consumers to follow federal guidelines and throw their unused or expired medications in their household

trash after mixing them with an undesirable substance (such as kitty litter or food waste) and placing them in impermeable, but nondescript containers. This will ensure that unwanted pharmaceuticals will not be used by others for whom the materials have not been prescribed;

- Consumers in communities served by a WTE or Subtitle D MSW landfill can confidently dispose of their unused medications in household trash because waste will be safely and effectively disposed. In addition, WTE and MWI serve as safe destruction destinations for consumer drug wastes collected through consumer take-back programs;
- Studies of pharmaceutical compounds in the ambient environment found that MSW landfills were not significant contributors to the pharmaceutical compounds that have been measured in the environment through disposal of landfill leachate. EPA studies have shown that modern MSW landfill liners will prevent migration of disposed pharmaceuticals to groundwater;
- Federal guidance indicates consumer medications in household trash can be safely disposed in highly regulated MSW landfills and WTE facilities;
- Companies selling or dispensing pharmaceuticals in the U.S. should be encouraged to participate in the development and implementation of safe and secure take-back programs; and
- Once safe, secure and federally-compliant take-back programs are available, The Food and Drug Administration should encourage their use as an alternative to the flushing recommendation on certain existing drug labels.

Approved by the International Board on July 1, 2011.



David J. Horinek  
International Secretary  
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