

**ENVIRONMENTAL SERVICES DEPARTMENT  
TUCSON/PIMA COUNTY HOUSEHOLD HAZARDOUS WASTE PROGRAM**

Staff has been asked by the Environmental Services Advisory Committee (ESAC) to address the following basic questions regarding Household Hazardous Waste (HHW):

- *How much HHW is generated (USEPA numbers)*
- *Why HHW is or is not a problem*
- *How much HHW is collected through the joint City of Tucson/Pima County program annually*

**How much HHW is generated (USEPA numbers):**

Region 9 of the United States Environmental Protection Agency states that each American produces an average of 4 pounds of HHW annually (see <http://www.epa.gov/region9/waste/solid/house.html#5>). In Pima County that would equate to just under 4,000,000 lbs. or 2,000 tons per year.

**Why HHW is or is not a problem:**

HHW is a problem if not stored properly to prevent exposure or ingestion by humans or animals, or if the chemicals are not disposed of properly. HHW does have the potential to cause harm. For example, drain cleaners are caustic and have high pH levels. In either solid or liquid form, they can severely burn human skin. Anti-Freeze or ethylene glycol, resembles cherry or lime Kool-Aid and has a sweet taste and odor, but is extremely toxic when ingested by humans or animals. Pool chemicals such as chlorine and bromine stored next to fertilizers can cause explosions under the right conditions. Mixing muriatic acid (common pool acid) with chlorine will result in the release of chlorine gas, which is extremely dangerous and potentially deadly.

The National Poison Data System (NPDS) and the Arizona Poison and Drug Information Center (AzPDIC) track human poison exposures. NPDS contains information from the human poison exposure case phone calls taken by all 57 poison centers across the country. The NPDS 2011 annual report states that 90% of all human exposures result from single-substance exposures. A total of 2,090,698 single-exposures were recorded in 2011, including 51.3% non-pharmaceuticals and 48.7% pharmaceuticals. Almost half (48.9%) of all human exposures was attributed to children less than 6 years. It is also recognized that 80.3% of all human exposures are unintentional with the highest route of exposure (83.2%) being ingestion.

Data from AzPDIC shows that human chemical exposures have only declined 2% from 2002 to 2012. Chemicals cited by the AzPDIC includes adhesives, batteries, cleaning substances, fertilizers, pesticides, paints and stripping agents, etc., which are items normally classified as HHW materials. In Arizona, almost half (46%) of the 14,801 non-pharmaceutical substances exposures were from chemicals and total pharmaceutical exposures were 11,756. It is important to note that chemicals in the home still constitute a high percentage (92%) of home poisonings,

especially in children, and pose a significant human health hazard while stored in the home.

Improperly disposed down the drain, HHW can cause pollution to waterways. Pima County has several National Pollution Discharge Elimination Systems (NPDES) Permits issued by the State of Arizona under the authority of the Federal Clean Water Act. As a requirement of their permits, Pima County samples incoming (influent) and outgoing (effluent) wastewater into their waste water treatment plants. In the early to mid-1990's, a trend developed suggesting lower concentrations of organic compounds in both the influent and effluent streams related to their treatment plants. The County could not pin these results to any source reductions initiatives implemented by their Industrial Wastewater Control Group. However, when they plotted against participation in the HHW Program against the reduction of organics in the waste streams over time, they found that higher participation in the HHW program resulted in lower organic compounds in the waste streams in and out of the treatment plants.

With regards to landfill disposal of HHW, Federal law allows disposal of HHW in the trash. Modern landfills are designed with synthetic liners and collection systems in place to prevent liquids from migrating into the ground beneath the landfill. Daily and final covers minimize any emissions and prevent the introduction of oxygen to the landfill environment. However, landfill liners and collection systems may ultimately leak over the time period of decades. For this reason, EPA encourages participation in HHW collection programs rather than discarding the HHW in the trash.

Collection of mixed residential trash by City or private haulers containing HHW may pose additional risks. There is no control on what chemicals are introduced to each other in a residential collection vehicle. Collection vehicles must pack or compact their contents to make room for more material. Doing so can cause aerosol cans to pop and containers with household chemicals in them to rupture and release their contents. One container may have chlorine and another some fertilizer. The result could be a fire or an explosion in the truck. Therefore, HHW drop off sites are a good option to prevent issues associated with leaving chemicals improperly stored around the house, or disposing of chemicals down the drain or in the residential trash can.

**How Much HHW is collected through the City/Pima County Program annually:**

In FY13, the City of Tucson/Pima County HHW collection program received and processed approximately 500 tons of material. Based on the USEPA generation number in the first response above, this was 25% of the estimated HHW generated in Pima County. Of that, 98% (490 tons) was either recycled or reused. The number of participants using the program during the same time was 33,300. Since the Program's inception, over 21 million pounds (10,823 tons) of HHW have been diverted from local landfills and wastewater treatment facilities.