

## **Help Protect Our Waterways: Keep PPCPs Out of Drains**

Small amounts of PPCPs (pharmaceuticals and personal care products) have been detected in some waterways across our country. Although there is currently no known danger to human health from PPCPs in the trace amounts found in these streams and rivers, their presence in the environment is emerging as an important national and international issue requiring further study.

### **What are PPCPs and are they harmful?**

There is no known danger to human health from pharmaceuticals or personal care products (PPCPs) at the extremely low levels sometimes found in drinking water. Studies have detected a limited number of PPCPs in rivers and streams in the U.S. at parts per trillion (ppt) levels because wastewater treatment does not completely remove them. [One ppt is equivalent to a few drops of water in 20 Olympic-sized swimming pools.] PPCPs include, but aren't limited to, pharmaceuticals, over-the-counter medicines, lotions, cosmetics, dietary supplements, and cleaning products.

PPCPs have also been reported at even lower levels in some drinking waters. When pharmaceuticals are detected, their levels are consistently at "trace amounts." At such low amounts, you'd have to drink thousands of gallons of water each day for days to approach the levels commonly found in even a single pill. People regularly consume or expose themselves to products containing the compounds in PPCPs in much higher concentrations through medicines, food, beverages, lotions, and other sources.

Researchers are looking at ways to better detect and measure PPCPs in waterways. Ongoing research also includes validating methods to accurately evaluate the potential health and environmental effects from PPCPs at extremely low levels. You can find more information about [PPCPs](http://www.kub.org) on [www.kub.org](http://www.kub.org).

### **Does KUB monitor for PPCPs?**

We don't currently monitor for PPCPs because regulatory agencies have not yet established standardized testing and limits for the literally thousands of chemicals in this category. If the EPA determines that a potential unregulated contaminant poses a health risk, the agency requires utilities to monitor for it to determine if it is detected in drinking waters across the U.S. KUB always participates in that type of assessment.

KUB already routinely monitors for over 100 different contaminants that could result from commercial products and processes, but we have not detected any of them in our drinking water.

### **Why are PPCPs suddenly a concern?**

PPCPs aren't really a new issue. The earliest reports of PPCPs in water date back more than 30 years. Now that water professionals have the technology to detect more substances and at much lower levels than ever before, however, we are finding PPCPs at very low levels in many of our nation's lakes, rivers, and streams. In recent years, information linking these chemicals to impacts on aquatic species brought the issue to the forefront and raised questions about any potential effects on humans.

### **How do PPCPs get into waterways?**

Some PPCPs used in animal husbandry enter waterways through agricultural runoff. Personal care products like soaps, lotions, sunscreens, etc., wash off in bathing. And some people mistakenly dispose of unwanted medications by flushing them down toilets or drains or putting them in the trash. Drugs disposed of that way can reach waterways through sewage treatment plants or by leaching out of landfills.

Drugs also end up in waterways because our bodies do not completely absorb them. What isn't used passes through the body and is flushed down the toilet. Small amounts of some drugs may enter the environment through wastewater treatment plants.

### **Why is flushing prescription or over-the-counter medication a bad idea?**

When you flush medication down your sink or toilet, it ends up at a wastewater treatment plant. Minute quantities of some PPCPs can remain in the treated water released back into the water cycle and can harm fish and wildlife.

### **If I shouldn't flush them, what do I do with unwanted drugs?**

Collection programs are the best way to dispose of expired, unwanted, or unused drugs. The programs help keep drugs out of sewers and landfills, where they may reach waterways. They also help reduce the chance that children or pets may find the drugs and eat them.

In our area, watch for advertisements about events the Knox-Area Medication Collection Program conducts in the spring and fall. The Knoxville Police Department also has a permanent medication drop-box in the Safety Building at 800 Howard Baker Jr. Avenue. So far, the group has collected more than 5,000 pounds of unwanted medications.

The Knox-Area Medication Collection Program is an interagency effort that includes the Knox County Health Department, Tennessee Department of Environment and Conservation, City of Knoxville Solid Waste, Knox County Solid Waste, Knoxville Police Department, UT Academy of Student Pharmacists, Hallsdale-Powell Utility District, KUB, and the Knoxville Metropolitan

Drug Commission. These organizations also work with surrounding counties to set up events to keep drugs out of the hands of children and to protect our waterways. For more information, visit the program's site at [www.medcollection.org](http://www.medcollection.org), the City's site at <http://www.cityofknoxville.org/solidwaste/meds.asp>, or Knox County's site at [http://www.knoxcounty.org/solid\\_waste/medication\\_collection.php](http://www.knoxcounty.org/solid_waste/medication_collection.php).

### **How do take-back programs dispose of unwanted medications?**

The EPA and the U.S. Drug Enforcement Administration recommend incineration, which is what the Knox-Area Medication Collection Program uses.

### **If PPCPs aren't a danger to human health, why is it bad for them to be in waterways?**

Keeping our water clean is an important public health goal. Common sense tells us it's better to not have PPCPs in our water, particularly until there are more studies about long-term effects on us and our environment.

Pharmaceuticals are considered an emerging contaminant, and the U.S. Environmental Protection Agency is investigating whether to set standards for them under the Safe Drinking Water Act. An additional concern is whether exposure to PPCPs is increasing antibiotic resistance in pathogens.

PPCPs are also suspected in causing changes to fish that live in affected water bodies. In some streams, female fish are outnumbering males, and researchers are finding males with female reproductive characteristics. Fish, reptiles, and humans, however, differ significantly in physiology and in their exposure to water.

### **What can I do to reduce the impact products I use have on our waterways?**

- Consider using personal care or cleaning products with ingredients like vinegar, lemon juice, or baking soda that are more likely to biodegrade harmlessly in the environment.
- Use products sparingly, completely, and according to label recommendations.
- Leave unwanted products in their original containers and place them in the trash.
- Avoid unnecessary ingredients, such as scents or those labeled antimicrobial, when purchasing new products.
- Never put prescription or over-the-counter medicine down drains or toilets.
- Don't wash your car in your driveway. Wash it in the grass and use environmentally friendly cleaning products. Or, go to a commercial carwash that treats wash water.
- Maintain your sewer lateral and cleanout to help keep rain, roots, etc., from causing sewer backups in your home or overflows in our environment.
- Don't connect sources of stormwater, like downspouts, to KUB sewers.

- Put cooking grease in the trash, not down drains. It builds up, blocks pipes, and causes backups in homes and overflows in the environment.
- Use environmentally friendly cleaning products.
- Properly dispose of hazardous household waste, like cleaning products, chemicals, and paint.
- Apply lawn and garden chemicals and pesticides according to directions and use as little as you can.
- Choose native plants that require less fertilizer and pesticides to maintain.
- Use landscaping to reduce runoff and prevent erosion, especially near streams or drainage ditches.
- Don't fill in or obstruct drainage ditches.
- Never pour used automotive fluids down a drain, flush them down the toilet, or empty them in a storm drain.
- Repair vehicles that are leaking fluids and clean up spills.
- Sweep up litter and debris instead of washing it into the street.
- For more tips, visit [Be a Part of the Pollution Solution](#) on [www.kub.org](http://www.kub.org).

## Resources

- KUB, [www.kub.org](http://www.kub.org)
- U.S. Environmental Protection Agency
  - [www.epa.gov/ppcp](http://www.epa.gov/ppcp)
  - [water.epa.gov/drink/](http://water.epa.gov/drink/)
- The Centers for Disease Control: [www.cdc.gov/healthywater/drinking](http://www.cdc.gov/healthywater/drinking)
- NSF International: [www.nsf.org/](http://www.nsf.org/)