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feature article

This Is Your Water...on Drugs?

4/23/2008

There have been several articles and reports over the last few years suggesting that pharmaceuticals were making their way into the nation's water supply. But the topic garnered national attention when The Associated Press (AP) ran a multi-story package in mid-March. The package concluded a five-month investigation into the topic of drugs making it into the nation's drinking water, usually by people disposing of their pills by flushing them or by leaving the body and being flushed into the wastewater system.

So how dangerous is this? What has been the response? What's the best way to get rid of drugs if not to flush them? This edition of eBulletin tackles those questions and concerns.

The AP Refresher

First things first. Let's recap the AP investigation that started the current furor over drugs in the water.

The set of stories came out March 10, 2008, the result of a five-month investigation by several AP reporters. Its National Investigative Team reviewed scientific reports, federal databases, environmental study sites and treatments plants, as well as conducted hundreds of interviews. They also surveyed water systems in the 50 largest cities as well as smaller systems in each state.

The team uncovered dozens of different types of pharmaceuticals in water systems throughout the country, with drugs ranging from anti-anxiety medication to allergy drugs to sex hormones. Some treated water tested positive for only a few drugs. Treated water in other areas showed a larger variety of drugs. In Philadelphia, Pennsylvania, for example, 56 drugs or drug byproducts were found in treated water.

AP noted that in general, testing by water systems for such drugs is not required by federal law. It also noted that those that drink bottled water, which often is purified tap water, may still be at risk of ingesting pharmaceuticals. Those who get their water from wells or aquifers also are at risk.

AP did note that the amount of drugs found was extremely small - measured in parts per billion, or even parts per trillion. But given that the use of prescription drugs is growing in the U.S. and that trace amounts of pharmaceuticals are now showing up nationwide in environmental surveys, many scientists and officials are concerned. Some pharmaceuticals are causing problems in small fish, feminizing males and even creating fish with both sex organs.

As a result, scientists are increasing their studies of the long-term effects of this problem, and other officials are looking at ways to combat it.

Additional Resources

Associated Press report: Drugs in Drinking Water

http://www.cnn.com/2008/HEALTH/03/10/pharma.water1.ap/index.html?section=cnn_latest

The Response

Since the report has surfaced, several entities have begun studying the topic and the long-term effects. Others have tried to quell the concerns of customers with explanations of the pharmaceuticals found and what it all means.

The EPA has a site dedicated to the topic. The site was around long before the AP story broke, and was last updated in December 2007. It explains the meaning PPCPs, or Pharmaceuticals and Personal Care Products as pollutants. This category not only includes the prescription drugs but also products such as lotions, cosmetics and perfumes.

According to the EPA, the biggest source of these pollutants is simple human activity, such as bathing, shaving or going to the bathroom. We rinse or flush these chemicals down the drain on a daily basis. While



water treatment can remove large amounts of these chemicals, trace amounts are still making their way into the water system by seeping into the soil or running off into water sources.

The better the filtration system, the better the removal. Reverse osmosis filtration, for example, removes more of the pharmaceuticals from drinking water than standard filtration found in most water treatment systems. However, reverse osmosis filtration still is a costly upgrade. With many systems, especially small systems, barely keeping up with basic infrastructure needs, the chances of widespread upgrades aren't likely in the next few years. So the EPA and other entities are studying the rate and effects of pharmaceuticals in drinking water, and they're trying to educate the public on the best ways to dispose of their drugs safely.

The US Geological Survey also is addressing this issue and is conducting research into the spread of pharmaceuticals in drinking water and the long-term effects. More information on this project is provided on their Web site, and a link is provided below.

The important thing to note for your customers is that, according to the EPA, "to date, no evidence has been found of human health effects from PPCPs in the environment." Reassure your customers that the drinking water meets or exceeds the federal and state safety standards, and that the amounts found so far in the other areas have been extremely small.

Roger Faubel, president of the Santa Margarita Water District Board of Directors, recently addressed the issue in a guest column for the *Orange County Register* in California. As he noted, "one would have to drink the equivalent of 120 Olympic-sized swimming pools of water" to equal one normal dose of medication.

Additional Resources

EPA: PPCPs in Drinking Water

<http://www.epa.gov/ppcp/>

USGS Toxic Substance Hydrology Program

<http://toxics.usgs.gov/regional/emc/index.html>

Pharmaceuticals in Water: A Problem We All Can Help Solve

<http://www.ocregister.com/articles/water-pharmaceuticals-customers-2000658-trace-plant>

The Solutions

The Office of National Drug Control Policy issued a list in February 2007 of ways to dispose of unwanted prescription drugs. Ironically, one of the methods listed is to flush the drugs down the toilet. The Food and Drug Administration advises flushing certain narcotics such as OxyContin, Percocet and Meperidine HCl tablets. However, the policy also states that drugs should be flushed only if the label or patient information specifically instructs doing so.

The EPA strongly advises against flushing any drug, since this is one of the ways such drugs end up in drinking water.

The Drug Control policy recommends throwing the drugs in the trash after taking them out of their original containers so they can't be easily identified. It also suggests mixing the drugs with kitty litter or coffee grounds, making them undesirable and less likely to find their way onto the streets.

The best solution offered is to take advantage of community take-back programs, if any are available. Some pharmacies or hospitals offer such programs. Police departments and county offices may be other sources of take-back programs.

Additional Resources

Office of National Drug Control Policy: Drug Facts

http://www.whitehousedrugpolicy.gov/drugfact/factsht/proper_disposal.html



1-2-3... Mark Kruger injects bottles of prescription medication into the Bella Vista, Arkansas, Police Department's Drug Incinerator. The incinerator is used as an alternative to flushing unwanted drugs, which can make their way into the drinking water system.

The Case Study: Bella Vista

The city of Bella Vista, Arkansas, has found one way to prevent pharmaceuticals from getting into the drinking water - incineration.

Bella Vista faced a couple of issues. First was the overall age of its population. The city's estimated population in the 2000 census was 16,582, with more than half that number 60 years old or older. In fact, the average age there was 61.2 years. Today, the population is about 25,000, according to city officials, and the average age has only shifted slightly lower. An older population means there's a chance more prescription drugs are being used.

The other issue was their system of waste disposal. The recently-incorporated city is nestled in the Ozark Mountains, and its hilly structure makes it difficult to get sewer services to some areas. While the commercial and townhome properties are on a standard sewer system, many of the city's residents still use septic systems.

That combination opens up the city to the possibility of having their natural water supplies tainted by drugs disposed of by flushing.

The Bella Vista Police Department and Benton County government now work together in a program called the PyroMed Pharmaceutical Incineration Program. The police department uses the incinerator to get rid of illegal drugs and prescription drugs they must confiscate from homes where the residents have died. In March, the department began working with Benton County officials to collect drugs from residents who simply wanted to get rid of them.

Now, residents drop off their unwanted pills in a collection bin outside the department. The collected drugs are burned about once every 10 days or so using the Drug Terminator, an incinerator made by Elastec/American Marine.

The Terminator uses forced air to accelerate a wood-burning fire. A special "injector" chute then pushes the drugs into the fire for destruction.

Jeremy Pretzsch, sales manager for the Incinerator at Elastec, said the unit usually is purchased by police departments, though others have called since the AP article broke to ask about disposing of pharmaceuticals using the device.

"It's a lot safer than flushing them," Pretzsch said. Because the unit burns the drugs at up to 1,200 degrees Fahrenheit, it produces little or no smoke and leaves only a small bit of carbon ash. The ash can be safely disposed of in a landfill or other trash facility, Pretzsch said. As a result, the drugs are destroyed without any harmful material making its way into the water system.

Pretzsch said the unit costs about \$3,500. Some police departments use funds obtained through drug seizures, but others have used government programs and grants to pay for the Incinerators.

In Bella Vista's case, an anonymous donor gave them the money to buy the incinerator.

Bella Vista Police Chief Jim Wozniak said they cleared the incinerator's use through several state and federal agencies, including the Arkansas Department of Environmental Quality. But because the fire burns so hot, it leaves very little residue and was deemed safe to use, he said.

While they're ready for the influx of drugs once word about the program gets out, Wozniak said they're hoping other agencies and government entities form their own PyroMed programs and purchase their own incinerators. So far, though, keeping up with the increasing stream hasn't been a problem.

Since the program began March 1, the police department has burned more than 230 pounds of drugs dropped off by residents, said Detective Sgt. Mark Kugler.

“We’re really happy with the response,” he said recently as they burned another stack of drugs. “If we can do this and keep it out of the water, that would be great.”

Additional Resources

Elastec/American Marine

<http://www.elastec.com>

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