



CITY OF ANN ARBOR, MICHIGAN

100 North Fifth Ave. P.O. Box 8647
Ann Arbor, Michigan 48107-8647
Web: www.A2Gov.org

CONTACT: Molly Wade, Water Quality
Manager, (734) 996-3275

CITY OF ANN ARBOR LEADER IN TESTING FOR PHARMACEUTICALS IN DRINKING WATER

ANN ARBOR, Mich. March 12, 2008 – The Associated Press recently released an article summarizing an extensive study of pharmaceuticals in drinking water in cities across the nation. Of the 62 water providers contacted during the AP investigation, 45% were not currently testing drinking water. Although the federal government does not require testing for drugs in water supplies, the City of Ann Arbor has taken a lead in water testing. Through grants from the Michigan Department of Environmental Quality (MDEQ) in 2004 and 2005, Ann Arbor conducted one of the nation's first comprehensive water testing of minute quantities of pharmaceuticals, personal care products, and endocrine-disrupting compounds in the city's drinking water. The reports from these tests are posted on the city's web site at www.a2gov.org.

MDEQ requires municipalities to test for over 80 contaminants in drinking water supplies. Each has a Maximum Contaminant Level (MCL). These contaminants include bacteria and many organic and inorganic compounds but not pharmaceuticals. Ann Arbor meets or exceeds all of the MDEQ standards. Both tap and bottled water may be expected to contain small amounts of some contaminants, according to the EPA.

Pharmaceuticals are not currently regulated in drinking water, although utilities and researchers around the world have begun to examine them. Other contaminants of concern are personal care products and endocrine-disrupting compounds. According to the EPA, pharmaceuticals and personal care products (PPCPs) are a grouping of chemical substances including prescription, over-the-counter, and veterinary drugs; cosmetics; and fragrances. Endocrine-disrupting compounds (EDCs) are chemicals that affect function of the endocrine system, which is a series of glands that regulate body functions through the release of hormones.

When humans take medications, the body doesn't completely metabolize the compounds in the medication, so the rest is excreted, flushed down the toilet, and ends up in wastewater along with water from bathing and household uses. Although it is not a recommended method of disposal, medications also

end up in wastewater when they are flushed down the toilet. In Ann Arbor, this raw sewage is treated at the wastewater facility and then it is released back into the Huron River.

Although the issue of PPCPs and EDCs in drinking water has been gaining attention recently, these chemicals have been present in water and the environment for as long as humans have used them, but improvements in technology have only recently allowed them to be detected at the miniscule levels present. Researchers have found that some foods actually contain more pharmaceuticals than drinking water. For example, an 8-oz cup of coffee had nearly 17 times more estrogen hormones than was found in drinking water, and soy milk had 3000 times the level.

In 2004, Ann Arbor tested for PPCPs and EDCs in the city's source water, drinking water, raw sewage, and treated wastewater. Water samples were collected four times throughout the year and tested for the presence of 22 compounds: seven antibiotics, two analgesics, one anti-epileptic, nine hormones and stabilizers, caffeine, a nicotine metabolite, and a solvent stabilizer. Of the 22 compounds, 10 were found in the source water, four were detected in finished water, 17 were found in raw sewage, and 15 were detected in the treated wastewater. All the contaminants were found in minute amounts, in parts per billion (ppb) or parts per trillion (ppt). You can visualize parts per billion as a ½ teaspoon of sugar in an Olympic-sized swimming pool.

The four contaminants detected in finished drinking water were two plant steroids (sitosterol: 0.800 ppb, stigmasterol: 0.105 ppb), cholesterol (plant and animal steroid): 0.640 ppb, and ibuprofen: 1.8 ppt. Of the 10 contaminants found in the Huron River source water, six of them were removed completely from drinking water and the four that remained were all found at lower levels than in the Huron River. Although the wastewater treatment only removed two of the 17 contaminants found in raw sewage, 10 of the 15 that were found in the wastewater effluent were reduced by at least 90%. Overall, these results indicate the City of Ann Arbor's drinking water treatment does a good job of removing PPCPs and EDCs from drinking water.

In a follow up study in 2005, 22 PPCP and EDCs were tested, but 11 of them were different compounds than in the 2004 study. In addition to the four contaminants detected in the 2004 study, two beta blockers (estrone and propranolol), four new hormones (17-b-estradiol, 17-a-ethinylestradiol, coprostanol and estriol), one anti-epileptic (carbamazepine), and caffeine were also detected in the parts per trillion range. Initial studies indicate that concentrations of these contaminants at these levels are not a human health risk, but more research is needed. The City of Ann Arbor continually monitors toxicological studies to determine if additional water testing is necessary.

To help prevent PPCPs and EDCs from entering the drinking water supply, dispose of all prescription and over-the-counter drugs correctly. Never flush any drugs down the toilet! Washtenaw County recommends that citizens seal medicines in their containers with duct tape, double wrap the containers in opaque plastic bags, and secure them with duct tape before throwing them in the trash. Ask your pharmacist if they have a take-back program for unwanted or unused prescription drugs. For more information on drug disposal, visit Washtenaw County's website at <http://recycle.ewashtenaw.org> to watch a short-video on "Safe Disposal of Medications."

#####