

## **Levels of Trace Pharmaceuticals in Drinking Water Too Low to Impact Human Health According to Water Research Foundation Study**

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Denver, CO ([PRWEB](#)) March 4, 2009 -- The concentrations of pharmaceutical drugs and endocrine-disrupting compounds found in our public drinking water are likely too low to impact human health, according to a new report by the Water Research Foundation, the nation's leading drinking water research organization.

The Water Research Foundation presented its findings at a February 27 congressional briefing.

Endocrine-disrupting compounds (EDCs) encompass a variety of chemical classes, including hormones, plant constituents (phytoestrogens), pesticides, compounds used in the plastics industry and in consumer products, and other industrial by-products. There is growing public attention and concern about the possibility of health effects from trace amounts of EDCs and drugs that are flushed down the toilet or enter the water supply through human and livestock waste. The Water Research Foundation report examined not only the presence of trace levels of EDCs and drugs in water, but explored if there is a potential link between the levels of these compounds found in water and effects on human health.

Water Research Foundation has committed up to \$1 million per year to an integrated, multi-year research program to address specific issues associated with ultra-low levels of drugs and chemicals in the water supply.

The report, titled Toxicological Relevance of Endocrine Disruptors and Pharmaceuticals in Drinking Water, concludes three years of research in collaboration with 17 water utilities.

"Even the most advanced treatment processes that we've studied won't achieve an absolute zero level of contaminants," said study researcher Shane Snyder, Ph.D., research and development project manager for Southern Nevada Water Authority. "Therefore, it's vital that we look at the real risks before we spend a tremendous amount of resources on the issue."

The study's objective was to inform water utilities, regulators, scientists, and the public about the occurrence and potential human health relevance of pharmaceuticals and EDCs in drinking water.

### Research Methods and Selected Findings:

The Water Research Foundation research team first selected 62 representative chemicals for further evaluation. The selection criteria included likelihood of occurrence, production volume, toxicity, and analytical capability. The scientists drew 300 water samples from 19 sites nationwide and analyzed them for the selected suite of compounds using extremely sensitive analytical methods with low part-per-trillion detection limits. The team conducted risk evaluations assuming exposure through drinking water for all target pharmaceuticals, 10 of the suspected EDCs, and three of the hormones. Acceptable daily intakes (ADIs) were calculated using methods consistent with Environmental Protection Agency approaches for determining levels of exposure to environmental

contaminants that are not likely to be associated with adverse health effects. To estimate the exposure of these compounds via drinking water, the ADIs were then converted to drinking water equivalent levels.

Key conclusions reported include the following:

- Of the 62 compounds analyzed, only three were consistently (>50 percent frequency) found in the water samples
- Trace concentrations of 24 compounds were detectable in at least 20 percent of raw (untreated) water samples
- Trace concentrations of 11 compounds were found in at least 20 percent of finished (treated) drinking water samples. Five prescription drug-related compounds were detected: atenolol, Dilantin, carbamazepine, gemfibrozil, and sulfamethoxazole. The scientists also found trace amounts of atrazine (a widely used herbicide), DEET (an active ingredient of insect repellants), metolachlor (a pesticide), and two flame retardants used in consumer products, Tris (2-chloroethyl) phosphate (TECP) and Tris (chloroisopropyl) phosphate (TCPP).
- The target compound detected at the highest concentration was atrazine. Atrazine was detected at levels as high as 870 parts per trillion or nanograms per liter (ng/l), less than a third of the federal regulatory limit of 3,000 parts per trillion or ng/l. The median level of atrazine detected in the study was 49 ng/l.

"Pharmaceuticals and EDCs can certainly be detected in water, and science will continue to establish lower and lower detection limits," said Snyder. "Based on the research done so far, they appear to occur at levels far below acceptable daily intake levels."

"Concerns may be raised because detection of chemicals seems to be evidence enough of risk," Snyder added. "But in the world of toxicology, it's the dose, or amount of a substance, that can create a health risk. It's the concentration that matters."

About the Water Research Foundation:

Founded in 1966, the Water Research Foundation is an international, 501c(3) nonprofit organization that sponsors research to enable water utilities, public health agencies and other professionals to provide safe and affordable drinking water to the public. With more than 950 subscriber members who provide water for 80 percent of the U.S. population, the Water Research Foundation has funded and managed more than 1,000 projects. For more information, go to [www.WaterResearchFoundation.org](http://www.WaterResearchFoundation.org).

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