

# Is our nation's water supply disrupting the human endocrine system?

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Exposure to emerging contaminants, even at extremely low doses, can cause adverse health effects for humans, including endocrine disruption which can lead to developmental malformations, interference with

reproduction, increased cancer risk and disturbances in the immune and nervous system functions. These emerging contaminants include pharmaceuticals and personal care products, hormones, perfluorinated alkyls and volatile organics, and they may pose a threat to both the environment and human health. Several presentations at the 2018 Society for Risk Analysis (SRA) Annual Meeting will examine occurrence, estimation of risk and the threat to human health posed by these contaminants in wastewater.

The presence of hormones and pharmaceuticals in groundwater used for drinking poses a potential threat to human [health](#). Laura Bexfield's presentation, "Hormones and pharmaceuticals in groundwater used as a source of drinking water across the United States," explores the results of the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Project study which analyzed samples from 1,091 groundwater sites across the U.S. for 21 hormones and 103 pharmaceuticals.

The assessment found at least one hormone or pharmaceutical in untreated groundwater at six percent of 844 sites representing the resource used for public supply, and at 11 percent of 247 sites representing the resource used for domestic supply. While the impact on public health is likely minimal based on comparisons of measured concentrations to health benchmarks, individuals who receive their drinking water from domestic wells or wells completed in fractured rocks have a higher chance of exposure.

The presence of chemicals and drugs also poses a threat to our ecosystem as these substances continue to taint natural ponds and creeks. Stormwater [best management practices](#) employ the use of retention/detention ponds, commonly known as stormwater catchment basins (SCBs), to capture runoff and its pollutants. This can result in very high contaminant concentrations in sediments that impact the

ecological function of the ponds. Vinka Oyandel-Craver, University of Rhode Island, along with Laura Schiffman and Varun Kasaraneni, examined the level of contaminants in five ponds along the I-95 corridor in Rhode Island. Their study, "PAH contaminant accumulation in stormwater catchment basins: New implications for management guidelines," analyzed lead, zinc and chromium levels in the ponds and proposes new methods for managing these levels.

Neha Sunger, Ph.D., West Chester University, analyzed the presence of chemicals and drugs in the Brandywine Creek in her study, "Method development for determination of codeine, fluoxetine and acetaminophen in Brandywine creek watershed." The chemicals sprayed onto fields to help crops grow, and the medicines people throw out or flush down the drain eventually get mixed in nearby rivers and streams. The methods used in Sunger's study will help researchers detect compounds in low concentrations in water sources nationwide.

These studies will be presented during The Many Faces of Emergency and Legacy Contaminants: Collecting, Interpreting, and Acting on Water Data symposium on Tuesday, Dec. 4 from 3:30-5:10 p.m. and the Understanding the Ecological and Health Risks Associated with Trace Organics in the Environment symposium on Wednesday, Dec. 5 from 3:30-5:10 p.m. at the 2018 SRA Annual Meeting at the New Orleans Marriott in New Orleans, Louisiana.

Provided by Society for Risk Analysis

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