

PFAS: An Emerging Risk to Public Health & Water Resources across Florida

By Marc Florian, Vice President, Site Assessment and Remediation

A recent report shows that hundreds of sites nationwide — including 22 in Florida — have been contaminated with highly toxic chemicals, including drinking water systems that serve an estimated 19 million people. [1] Chief among these contaminants are perfluoroalkyl and polyfluoroalkyl substances, known collectively as PFAS.

Should you worry? PFAS are man-made chemicals that have been manufactured and used in consumer products across the globe dating to the 1940s. They can be found in nonstick cookware, water-repellent clothing, stain resistant fabrics and carpets, as well as food wrappers, certain cosmetics, and firefighting foams. [2]

While they have been largely phased out of production in the United States over the course of the past decade, what's here already breaks down slowly

and has been found to bioaccumulate in people and animals.

If that's not concerning enough — studies show that even minute concentrations can have adverse effects on human health. According to the federal Agency for Toxic Substances and Disease Registry (ASTDR), PFAS contamination has been linked to thyroid disease, liver problems, low birth weight, some cancers and other health issues. [3]

While Florida has yet to establish a legally enforceable cleanup standard, the lifetime Health Advisory Level (HAL) published by the EPA back in 2016 is only 70 parts per trillion (ppt), [4] and critics say that's too high. In fact, the ASTDR recently concluded that minimal risk levels could be as much as seven to ten times lower than the HAL. [5, 6]

Why is this important? 70 ppt is a pretty small number. (Think of 70 drops in an Olympic size swimming pool.) So, imagine how everyone in Satellite Beach reacted when ABC News reported last year that all 28 wells tested at Patrick Air Force Base showed elevated levels of PFAS; some as high as 4.3 million ppt or 61,000 times the EPA's HAL. [7]

And while the Florida Department of Environmental Protection (FDEP) has been coordinating with the Department of Defense on the historic discharge of Aqueous Film Forming Foam (AFFF) at military facilities across the state, it's also begun to look at 27 of the state's 45 certified firefighting training facilities that are known or suspected of having used these same chemicals. [8]

When state officials first discovered elevated levels of PFAS in the water at the state-run Fire College in Ocala late

last year, they concluded the problem had been years in the making, and like the situation in Satellite Beach, they would soon discover it had impacted not only water at the facility, but also the water of nearby neighbors as well. [8]

More recently, PFAS contamination was identified in the City of Stuart's water supply after testing in three of six separate municipal wells not far from where firefighters practiced from around Martin County. Although the leaders in Stuart worked quickly to take the wells off-line, install filters, and mitigate exposure, the long-term fix is estimated at \$16 million. [9]

The point is, it doesn't take much PFAS to contaminate an entire water supply, whether for public consumption or irrigation. And while the focus thus far has been largely on airports and military bases due to the use of PFAS-containing AFFF, there's a growing concern over municipal landfills and wastewater treatment facilities, as well, and the risks this emerging contaminant might have on public health and water resources across Florida. As a reporter at the Sunshine State News recently wrote, "The bottom line is this: Florida's water woes, bad as they are already, may be about to intensify immeasurably." [9]

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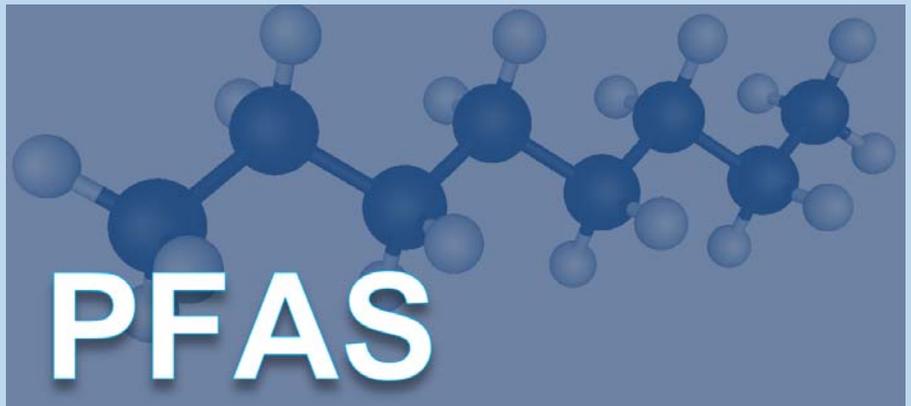
Other Contaminants of Emerging Concern

PFAS isn't the only new contaminant we need to keep an eye on. Contaminants of emerging concern (CECs), including pharmaceuticals and personal care products (PPCPs), as well as diethyltoluamide (DEET), the most common active ingredient in insect repellents, are increasingly being detected at low levels in surface water and groundwater nationwide as a result of domestic use. Many CECs and PPCPs act as so-called endocrine disruptors, which can alter normal hormonal functions and lead a variety of adverse health effects, while the health risk associated with others remains uncertain. The United States Geological Survey (USGS) has been tasked with monitoring and assessing these chemicals throughout the nation. What are they finding? In central Marion County for example, the USGS detected DEET in groundwater samples from 27 wells in the Upper Floridan aquifer and three springs at the headwaters of the Silver River. [10] While the EPA completed an interim review of DEET in 2014 and concluded that its normal use "does not present a health concern to the general population, including children," its risk as an endocrine disruptor is not yet fully known, and like PFAS, its ecological impact remains the subject of ongoing debate. [11] Most importantly, findings like these demonstrate the susceptibility of our drinking water supplies to CECs in general.



Project: Former Landfill, South Florida – Confidential Client

ECT recently investigated a 9.9-acre parcel located within the former Landfill in South Florida, which during its history received various types of solid waste, including domestic solids, yard trash, and construction and demolition debris. Fueling what has become a growing concern over PFAS in leachate collected by landfills, PFAS compounds were identified by ECT in seven groundwater samples at concentrations more than four times the EPA's HAL.



Project: Determining the Efficacy of PFAS Transformation using Plasma-based Water Treatment Process ECT is working with a South Korea-based technology firm to design and implement studies to assess the efficacy of electrical discharge plasma as a remedial response to PFAS compounds. Due to the low efficiency of conventional techniques (carbon adsorption, ion exchange) and several disadvantages associated with other developing and existing methods (advanced oxidation processes, photocatalysis), ECT's efforts will prove essential to determining whether this unique application of this innovative technology represents one of the most advanced and affordable methods for treating water containing PFAS.

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