

# PFAS: 'forever chemicals' now pervasive in the environment



In 2019, two accidents occurred in the Farmington River watershed that startled the nonprofit group that protects the river and its tributaries into learning about PFAS.

That's the shorthand name for per- and polyfluoroalkyl substances, often called "forever chemicals" because they break down slowly and accumulate in the bodies of humans and wildlife, waterways and soil.

"Emerging contaminants were not something that was on our radar," said Aimee Petras, executive director of the Farmington River Watershed Association. "But we had to learn about it, and we were shocked to learn that PFAS are everywhere."

What prompted the association into "advocacy and action mode," said Petras, was a June 8, 2019, spill of 40,000 gallons of fire-fighting foam stored in a hangar at Bradley Airport into the Farmington River in Windsor. Then in October, another spill occurred after a plane crash and fire at the same airport. It released about 23,000 gallons of fire-fighting foam into Rainbow Brook, which flows into the Farmington River.

State Department of Energy and Environmental Protection emergency crews responded to both accidents with cleanup crews, monitoring of the water, wildlife and sediments, and temporary advisories against eating fish or swimming. DEEP held public information meetings for Windsor residents. A watershed group representative joined a state PFAS task force, which advocated for a state takeback of PFAS-containing fire-fighting foam and replacement with a "green" substitute.

In the aftermath, Petras and others at the watershed group were left with a disquieting new realization about the ubiquitous presence of PFAS and its risks. These chemicals are found in everything from dental floss to drinking water to livestock and microwave popcorn bags. Research points to a range of health effects from exposures, including increasing risks of cancer, hormonal and developmental disorders and fertility problems.

"It's so complicated," Petras said. "How do you protect yourself?"

Results of the survey conducted for the Sea Grant CECs project last year shows concern about PFAS is becoming more widespread. Along with microplastics, PFAS ranked at the top of the list of CECs the 646 respondents wanted Sea Grant to focus on.

"We're just scratching the surface in learning about the health

Above, Ted Rathjen, senior shellfish warden for Groton, steers the boat as Kaitlyn Campbell, post-doctoral student in the Brandt Lab at UConn, and Anika Agrawal, doctoral student in the lab, prepare to collect oysters and mussels to test for PFAS in shellfish tissue. Right, some of the vials and other equipment used in the field work. Photos: Judy Benson



effects," said Ray Frigon, assistant director of the remediation division at CT DEEP who led the response to the 2019 accidents. "Those incidents were very much an in-your-face moment regarding PFAS."

The state takeback program, he said, was an important first step to "stop the bleeding" and get the PFAS-laden foam out of fire departments, but much more needs to be done.

Chris Perkins, also a member of the state's PFAS task force, agrees. Laboratory director for the UConn Center for Environmental Sciences and Engineering, Perkins and Jessica Brandt, professor in the UConn Department of Natural Resources and the Environment, are in the middle of a two-year project focusing on PFAS in the environment, specifically in oysters and ribbed mussels, plankton and water samples from the Poquonnock River in Groton. It's a waterway with proximity to likely pathways of PFAS chemicals from nearby Groton-New London Airport, where fire-fighting foam is stored, and stormwater outfall pipes empty into it. It also has popular recreational shellfish beds nearby.

The research, funded by Connecticut Sea Grant, is challenging, Perkins said, requiring elaborate protocols to prevent contamination from researchers' clothing and skin, which can contain PFAS from synthetic fibers and personal care products.

"It's not easy or cheap work to do," he said. "And there aren't a lot of labs equipped to analyze for PFAS."

Thus far, their work has found small amounts of five of 22 types of PFAS in shellfish tissue and in the water samples. Plankton samples have not yet been analyzed.

"But we don't know if the amounts are harmful," Perkins said. "As far as impacts on health, we don't know what the threshold is."

—Judy Benson