# Assessment of PFAS contamination from a local plastics plant in Narragansett, RI

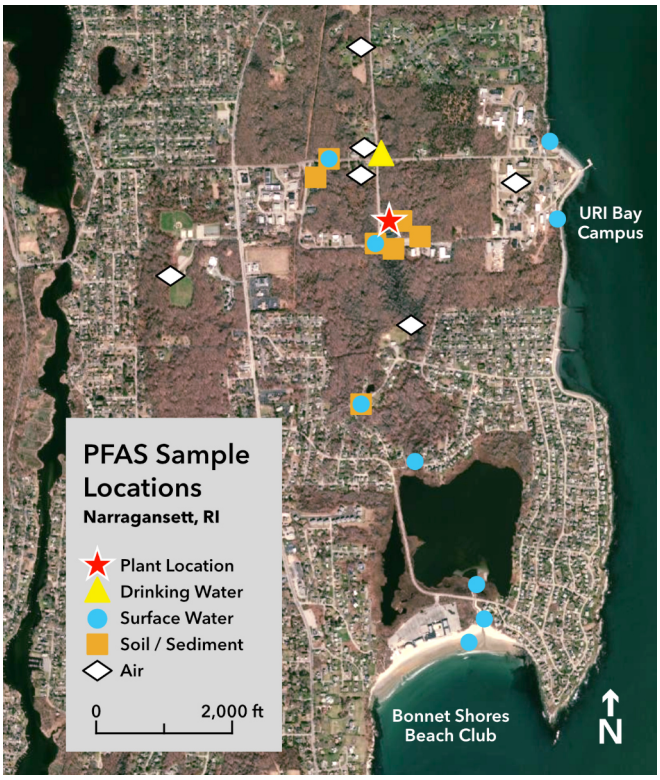
STEEP
Sources, Transport, Exposure & Effects of PFASs
UNIVERSITY OF RHODE ISLAND SUPERFUND RESEARCH PROGRAM

## What are PFAS?

PFAS (per- and polyfluoroalkyl substances) are a large family of chemicals commonly used in nonstick, stain-resistant, and water-resistant products such as cookware, food packaging, textiles, camping gear, and plastics. They are also added to some firefighting foams (AFFF) used at military bases, airports, and fire training areas. Due to their chemical structure and extreme persistence in the environment, PFAS are often referred to as "forever chemicals." Exposure to PFAS is known to cause some adverse health effects, including immune dysfunction, developmental disorders, elevated cholesterol, and endocrine disruption as well as being linked to certain types of cancer. There are no federal regulations in place regarding exposure limits for PFAS, but the U.S. Environmental Protection Agency has issued a health limit advisory (HLA) of 70 parts per trillion (ppt) for the sum of PFOA and PFOS, two of the most abundant PFAS chemicals. For reference, 1 ppt is roughly equal to a drop of water in 20 olympic-sized swimming pools.

## How did STEEP assess the presence of PFAS?

In spring of 2019, a community in southern Rhode Island raised concerns about foul odors and potential contamination emanating from the DeWAL-Rogers plastics plant in Narragansett, RI. DeWAL-Rogers Corporation produces high-performance plastic polymer films, tapes and coatings, including Teflon tapes, which contain PFAS. South County Clean Air Action (SCCAA), a local nonprofit organization, contacted STEEP scientists at the University of Rhode Island to collect samples around the facility and determine if PFAS chemicals had been released into the surrounding neighborhood. (It should be noted that PFAS do not emit an odor and it is unlikely the two concerns are related—plastic plants use many chemicals and this investigation only focused on potential PFAS contamination.)




A total of 27 environmental samples (soil, air, water) were collected by STEEP scientists for PFAS analysis. Nine surface water samples were collected from streams and water bodies near the plastics plant to track potential contamination in local waterways. Ten soil (terrestrial) and sediment (underwater) samples were collected from up- and downwind of the facility to evaluate for air transport. And six air samplers were deployed outdoor near the facility and in the surrounding neighborhoods. Additionally, two drinking water samples were collected from nearby residences with private wells. (Most residences in the area receive drinking water from municipally treated sources.) All samples were screened for approximately 30 different PFAS chemicals using liquid chromatography mass spectrometry in Dr. Rainer Lohmann's laboratory at the University of Rhode Island.

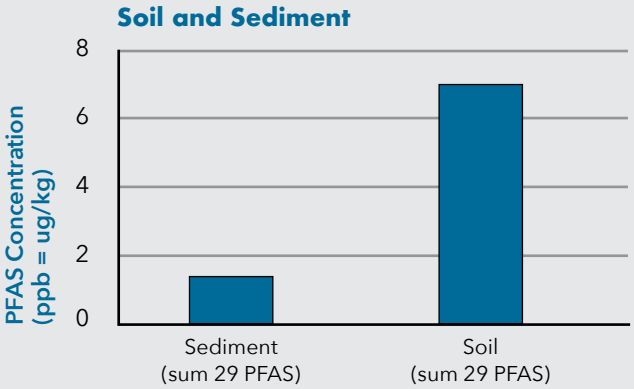
## What did STEEP find?

- PFAS concentrations ranged widely across the study area. For both water and soil/sediment samples, the highest PFAS concentrations were found near the facility and concentrations generally decreased with distance away from the plastics plant.
- Concentrations of PFOS and PFOA (two of the most common PFAS chemicals) were detected in drinking water at levels well below the EPA's HLA (70 ppt) and even below the nation's strictest level (8 ppt in Michigan for PFOA alone). STEEP research related to adverse health impacts aligns more strongly with the strictest level.
- Air samplers did not detect any PFAS in the air near the plant or in the surrounding neighborhoods.

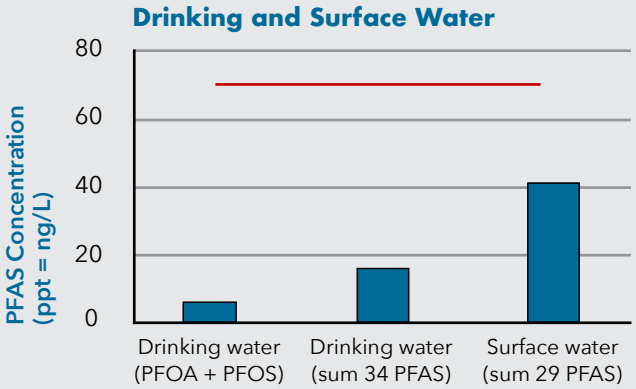
# Results Summary*

| | Minimum Concentration | Maximum Concentration | Average Concentration | Number of samples | Number of PFAS chemicals |
|---|---|---|---|---|---|
| Soil (total) | 0.76 ppt | 14 ppb | 7.1 ppb | 7 | 29 |
| Sediment (total) | 0.34 ppb | 3.1 ppb | 1.4 ppb | 3 | 29 |
| Surface water (total) | 4.5 ppt | 183 ppt | 41 ppt | 9 | 29 |
| Drinking water (total) | 13 ppt | 19 ppt | 16 ppt | 2 | 34 |
| Drinking water (PFOA + PFOS) | 5.8 ppt | 6.9 ppt | 6.4 ppt | 2 | 2 |

***all air sample concentrations were below the detection limits of the instrument**
ppb = parts per billion; ppt = parts per trillion




**Average sediment concentration (3 sites), average soil concentration (7 sites).**




**Average PFAS concentrations from drinking water wells (2 sites) and surface water (9 sites). Red line indicates EPA HLA (70 ppt total for PFOA and PFOS).**

## What do the results mean?

While PFAS were detected in water and soil, the greatest concentrations remain localized around the plastics plant. Levels found in the surrounding neighborhood are comparable to other "background" concentrations observed in places without a known source of PFAS contamination. The two drinking water samples were significantly lower than the EPA HLA, and on target with other drinking water samples in Rhode Island. Most residences along South Ferry Road are on municipal water, so any localized PFAS contamination in the ground water would not impact their drinking water.

For those on well water who remain concerned, the installation of an activated carbon (charcoal) or reverse osmosis filter has been shown to be effective for PFAS removal. STEEP scientists do not believe that PFAS release is causing the foul odor around the plastics plant.

As scientists continue to learn more about PFAS and their health impacts, it is recommended to reduce your exposure as much as possible. To learn more about how to reduce your PFAS exposure, check out the tip sheets on the STEEP website: **https://web.uri.edu/steep/pfas/** or **https://web.uri.edu/steep/resources/outreach/**

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Scan this QR code for complete results of this study, including all data, or visit:
**https://web.uri.edu/steep/files/south-ferry-data-supplement.pdf**

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