PFAST Network (Per- and Polyfluoroalkyl Substance Testing Network)

Meet Team 1: Water sampling and PFAS analysis

Lee Ferguson, Ph.D., co-lead, is an Associate Professor of Civil and Environmental Engineering at Duke University. His research focuses on development of methods using high-resolution mass spectrometry for targeted and non-targeted analysis of emerging pollutants in the aquatic environment.

Detlef Knappe, Ph.D., co-lead, is a Professor of Civil, Construction, and Environmental Engineering at NC State University. His research focuses on source water protection by identifying contaminants through targeted and non-targeted analyses and on the development of treatment approaches for the removal of unregulated contaminants.

Mei Sun, Ph.D., co-investigator, is an Assistant Professor of Civil and Environmental Engineering at UNC-Charlotte. Her research focuses on the occurrence and removal of emerging contaminants. She helped reveal the presence of PFASs in drinking water sourced from the Cape Fear River (CFR).

Gordon Getzinger, Ph.D., Research Scientist at Duke, cheminformatics scientist
Abigail Joyce, Ph.D., Research Scientist at Duke, sample collection and mass spec analysis
Noelle DeStefano, Ph.D., Postdoc at NC State, sample collection and mass spec analysis
Yuling Han, Ph.D., Postdoc at UNC-Charlotte, adsorbable organic fluorine analysis

Team Objective:

To address the mandate of NC Senate Bill 99, the overall goal of Team 1 is to analyze all municipal drinking water sources in NC for PFASs using suspect screening, non-targeted analysis, and quantitative analysis. Specific aims include:

- Collect water samples during 2018/2019 at the intake of all 191 municipal surface water systems in NC and from one well each at all 149 municipal systems treating groundwater in NC. For systems with detectable PFASs, collect an additional set of samples during the third quarter of 2019.
- Quantify targeted PFAS in water samples using highly sensitive and specific tandem mass spectrometry approaches with authentic standards of known concentrations.
- Analyze all water samples using high-resolution mass spectrometry to identify PFAS via suspect screening for expected PFAS and non-targeted analysis of unknown abundant peaks.
- Complement non-targeted analyses with adsorbable organic fluorine (AOF) measurements to estimate what fraction of the AOF measurement can be explained by quantifiable PFASs identified in targeted and non-targeted analyses.