RTI INTERNATIONAL

Identifying & Mitigating Per- and Polyfluoroalkyl Contaminants

Over the past decade, per- and polyfluoroalkyl substances (PFAS) have been classified as toxic environmental pollutants. PFAS can be found:

- In many commonly used products, like water-resistant clothing, stain repellent furniture and carpet, and in some children's plastic toys.
- In household cleaning products, personal care products, nonstick coatings for cookware, and non-aqueous film-forming firefighting foam.

Personal exposure to PFAS can come from a variety of sources, including ingestion of water, food, and soil, inhalation of air and dust, and direct contact.

Since 2016, we have won:

50
awards

$115M
in funding

RTI International conducts basic and applied research that focuses on measuring PFAS levels in water and air, and helps to identify, communicate, and mitigate the risks of PFAS in environments and homes. We apply analytical approaches and screening to identify specific compounds that enable optimized detection of chemical "fingerprints" in water and air, and subsequent quantitation of compounds of interest. Through modeling we can determine how individuals are exposed to PFAS and what they can do to reduce their exposure levels and conduct epidemiological studies to explore the health outcomes from PFAS exposure. We also use the adverse outcome pathway (AOP) framework to assess chemical toxicity in a more comprehensive manner.

Expertise

Air, Dust, and Water Quality Measurements, Monitoring, and Epidemiologic Studies	Collection of air measurements using MicroPEM™ and ECM personal exposure assessment in a wearable form factor.
	Determination of PFAS risk through vapor intrusion pathways into buildings.
	Fate and transport modeling of PFAS contamination in drinking water in drinking water and well water.
	Epidemiologic studies to investigate the health effects in communities exposed to PFAS through drinking water.
	Sample collections and analysis of PFAS contamination in municipal solid waste and landfill leachate.
Hazard Identification Modeling and Exposure Assessment Analytics	Perform aerosol detection and speciation and aerosol particle size determination.
	Assess biological exposure and identification of pathogens and biomarkers.
	Support an in vitro project to assess hepatotoxicity of PFAS compounds.
	Study compounds that span a wide variety of chemical functionality—alcohols; ethers; sulfonates; acids; quaternary amines; anhydrides; amines; amides; and esters—including straight chain, branched, and cyclic compounds.
	Confirm identity and purity for 38 PFAS compounds using gas chromatograph (GC)/mass spectrometer (MS) methods.
	Develop and optimize GC/MS analysis methods for 26 PFAS compounds to quantitate the PFAS compounds in biological media.
	Support multiple toxicology studies to assess toxicity and bioaccumulation of various PFAS compounds and Aqueous Film Forming Foams (AFFF) products.
	Develop formulations to administer PFAS compounds to laboratory animals.
	Develop, optimize, and validate • Analysis methods to determine dose concentrations in various PFAS formulations, and • Bioanalytical methods to quantitate various PFAS compounds and their metabolites in biological tissues, cell media, and AFFF products.
	Develop and optimize untargeted analysis methods to determine various PFAS compounds and their metabolites in biological tissues, cell media, and AFFF products.
	Perform biosolid pollutant modeling and assessment of PFAS.
	Conduct AOP modeling to understand the biological mechanisms associated with PFAS contamination.
	Perform pharmacokinetic (PK) modeling to calculate PFAS serum concentrations for exposed individuals.
Removal/ Eradication	Demonstrate that Pt/SiC catalysts have excellent destruction efficiency for perfluorooctanoic acid (PFOA).
	Develop methods to determine removal/ eradication efficiencies in wastewater samples.
	Perform analysis of filtered water samples to determine the removal efficiency.

Experts

RTI supports multiple areas related to PFAS based on our experts' focus areas, research, and experience. Learn more about some of our experts below.

Dr. Bruce Blough
Senior Research Chemist

Dr. Linda Brown
Senior Director, Epidemiology

Dr. Seung-Hyun Cho
Principal Exposure Scientis

Sarah Colley
Research Environmental Scientist

Dr. Steve Edwards
Pharmacologist

Dr. Tim Fennell
Senior Director, Analytical Chemistry and Pharmaceuticals

Dr. Reshan Fernando
Senior Research Chemist

Kelly Hoffman
Research Environmental Scientist

Crystal Lee Pow Jackson
Research Environmental Scientist

Dr. Keith Levine
Senior Director, Analytical Sciences

Ted Lillys
Research Environmental Engineer

Dr. Chamindu Liyanapatirana
Research Chemist

Riley E. Mulhern
Research Environmental Engineer

Jamie Pero Parker
Innovation Advisor

Jennifer Hoponik Redmon
Director, Environmental Health and Water Quality

Dr. Mustapha Soukri
Senior Research Chemist

Dr. Jonathan Thornburg
Senior Research Engineer, Director of Exposure and Aerosol Technology

Rachel Tumin
Applied Epidemiologist

Keith Weitz
Research Environmental Scientist

Donna Womack
Director, Center for Environmental Health, Risk Assessment, and Sustainability

Recent Publications

- Perfluoroalkyl substances measured in breast milk and child neuropsychological development in a Norwegian birth cohort study.
- Early life exposure to perfluoroalkyl substances (PFAS) and ADHD: A meta-analysis of nine European population-based studies.
- Early- life exposure to persistent organic pollutants (OCPs, PBDEs, PCBs, PFASs) and attention-deficit/ hyperactivity disorder: A multi-pollutant analysis of a Norwegian birth cohort.
- Prenatal exposure to perfluoroalkyl substances, immune-related outcomes, and lung function in children from a Spanish birth cohort study.
- Longitudinal assessment of point-of-use carbon filters for removal of per- and polyfluoroalkyl substances from private well water.
- A participatory science approach to evaluating factors associated with the occurrence of metals and PFAS in Guatemala City tap water.
- Predicting the risk of GenX contamination in private well water using a machine-learned Bayesian network model.
- Development and validation of an analytical method for quantitation of PFAS constituents in rat plasma, urine, and liver by UPLC-MS/MS (p. 66, No. 2026).
- Untargeted mass spectrometric analysis of per- and polyfluoroalkyl substances (PFAS) in rat matrices following exposure to aqueous film-forming foams (AFFFs) (p. 66, No. 2027).
- Per- and polyfluoroalkyl substances (PFASs) in airborne particulate matter (PM2.0) emitted during floor waxing: A pilot study.
- PFOS dominates PFAS composition in ambient fine particulate matter (PM2.5) collected across North Carolina nearly 20 years after the end of its US production.

Contact Us

Ed Monachino, MS
Senior Business Development Specialist
emonachino@rti.org

Amy Volckens, MS and PE
Strategic Account Executive (Climate)
avolckens@rti.org

RTI International
3040 E. Cornwallis Road, PO Box 12194
Research Triangle Park, NC 27709-2194, USA

Available funding vehicles include OASIS, Omnibus 3, STREAMS, GSA MAS, CIOSP3, SPARC, DOE MESA, RMADA2, ITOPSS, and MIDS.