

Per- and Polyfluoroalkyl Substances (PFAS) Services

Products and Services to Support PFAS Monitoring and Remediation

SiREM Provides Products and Services for Monitoring and Remediating PFAS

Over the last few years, per- and polyfluoroalkyl substances (PFAS) have emerged as a major environmental concern because they are toxic, tend to bioaccumulate, and are persistent. Historically, large amounts of PFAS have been released into groundwater, sediment, soil, and surface water. Although much of this release has been from the aqueous film-forming foam used in fighting fires, PFAS are also in many consumer products and discarding those products has led to PFAS in landfill leachate.

There is no question that PFAS need to be addressed. To address PFAS in the environment, we must understand concentrations, migration pathways, and bioavailability. Once these aspects are understood, PFAS impacts can be properly delineated, the risk for a site can be assessed, and the scale of the problem can be defined. Once the scale of the problem is defined, remediation options can be evaluated through bench-scale treatability testing.

At SiREM, our microbiologists and remediation specialists are engaged in continuous research and development regarding various PFAS compounds—how the compounds behave in the environment and how to reduce or remove them from various media. As a leader in applied remediation technologies, SiREM provides products and services for monitoring and remediating PFAS, including passive sampling and treatability testing.

Passive Sampling Services

SiREM's PFASsive™ is just one example of how our technology is improving the efficiency of site investigation, assessment, and remediation. Because PFASsive measures only the bioavailable PFAS (that is, the dissolved PFAS) in sediment porewater, surface water, and storm water, it provides the most relevant information to researchers—information that helps determine the actual environmental risk of the PFAS present at a site. By measuring the most relative concentrations and not precipitated or adsorbed concentrations, which aren't bioavailable to receptors, PFASsive samplers can potentially save a site owner millions of dollars in unnecessary investigation, remediation, and management costs.

PFAS environmental impacts are complex. Existing solutions need to be improved and additional research needs to continue to provide innovative solutions to this complex problem. At SiREM, we are dedicated to validating existing technologies, finding new ways to understand the impact of PFAS on the environment, and developing innovative approaches to monitor and remediate PFAS.

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Talk to a SiREM representative today about our PFAS products and services.

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Treatability Testing Services

Along with technology for monitoring PFAS, SiREM performs bench-scale treatability testing to evaluate technologies for PFAS remediation under various site conditions. Testing remedial technology options in a laboratory setting with material from the project site gives researchers the opportunity to determine which option is best and the opportunity to optimize the technology before it is implemented at the project site. We provide treatability testing for the following:

- **Sorptive media isotherm testing:** To determine the capacity of the sorptive media to sorb PFAS.
- **Rapid small-scale column testing:** To determine PFAS treatment effectiveness by sorptive media and to simulate breakthrough behavior at reduced time and water volume
- **In situ solidification and stabilization:** To evaluate amendments to prevent PFAS in soil from leaching into surrounding groundwater.
- **Adsorption and desorption studies:** To assess how PFAS move in groundwater, and aquifer solids under natural site conditions.

Because PFAS remediation is still in its infancy, numerous potential treatments are being developed and assessed across research laboratories worldwide. To help the research progress, SiREM also provides independent third-party evaluations for new or existing technologies in this emerging science of remediating PFAS.

Molecular Genetic Testing

Research is underway for using microorganisms to breakdown (biodegrade) PFAS compounds into less harmful compounds. In fact, recent research has identified several microbial groups (e.g., white rot fungi) and certain strains of microbes (e.g., *Acidimicrobiaceae* sp. strain A6) that appear to help degrade PFAS. As the research identifies these natural microbes that could possibly help biodegrade PFAS, our Gene-Trac® NGS testing can be used to characterize the site- and media-specific microbe communities and identify whether these helpful microbes are present naturally at the project site.

Research and Development

Although the science community's understanding of PFAS biodegradation is currently limited and very challenging, researchers worldwide are actively engaged in developing an understanding of how PFAS biodegrade. SiREM has partnered with a number of academic collaborators investigating biological remediation options for PFAS. Testing has begun on SiREM's existing bioaugmentation cultures to investigate the potential roles these cultures could play in PFAS biotransformation pathways.