Aqueous Film Forming Foam (AFFF): Forensics as a Differentiator

Forensic PFAS Markers Help AFFF Source Identification

Per- and polyfluoroalkyl substance (PFAS)-based surfactants have been used in firefighting foams, known as aqueous film-forming foams (AFFF), since the mid-1960s. AFFF is responsible for some of the largest and most complex, costly, and difficult releases of PFAS in the environment to investigate and remediate.

As a result of AFFF's widespread uses and pervasive presence, it is a major source of PFAS releases in our environment and we have performed many investigations for this type of PFAS.

Complex Mixtures & Signatures

PFAS in AFFF and subsequently released in the environment are almost always present as mixtures of individual PFAS that may or may not be able to be identified and quantified by discrete analyses. The formulations of AFFF have changed throughout the years. Chemical signatures from these mixtures can provide forensic markers to assist in the determination of the source of an AFFF release, and specifically the type of AFFF released. Additionally, with a proprietary analyte comparison mapping tool, TRC can help determine the source of PFAS and chemical trends across large spatial areas.

PFAS signatures, however, cannot be evaluated in isolation. TRC uses a multiple lines of evidence approach and provides careful consideration to differentiate complex mixtures of PFAS and distinguish sources of PFAS in environmental media. TRC considers the following:

- Chemical signatures/fingerprints
- Hydrogeologic data, site operational history, timing of releases and other site data
- Unique fate and transport properties of PFAS
- Transformation products of common AFFF precursor components
- Mixing, dilution and comingled plumes
- Diagnostic ratios that can help distinguish legacy AFFF from modern fluorotelomer AFFF sources, for example

TRC has nationally recognized PFAS experts who understand the various targeted and non-targeted PFAS analyses as well as the laboratory procedures that greatly impact the final reported data. TRC's experts help you determine the following:

- Appropriate PFAS analysis for a given site
- Specific PFAS to select for signature evaluation
- Impact of differences in laboratory methodologies from standard operating procedures
- Effect of PFAS transformation on chemical concentrations fingerprints
- Effect of PFAS sorption to solids on chemical
- concentrations/fingerprints

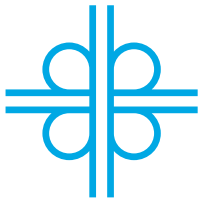
Let TRC help you navigate PFAS sources at your AFFF-impacted site through thoughtful analyses and expert interpretation to minimize your potential liability.

About TRC

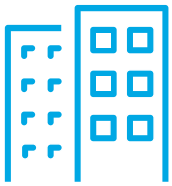
Groundbreaker. Game changer. Innovator. TRC is a global firm providing environmentally focused and digitally powered solutions that address local needs. For more than 50 years, we have set the bar for clients who require consulting, construction, engineering and management services, combining science with the latest technology to devise solutions that stand the test of time.

TRC's nearly 6,000 professionals serve a broad range of public and private clients, guiding complex projects from conception to completion to help solve the toughest challenges. We break through barriers for our clients and help them follow through for sustainable results.

Power & Utilities

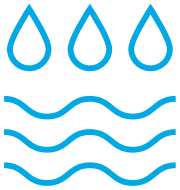


Transportation



Real Estate

Government



Water

Environment & Sustainability

Digital Solutions