

Per- and Polyfluoroalkyl Substances: From Operational Use of AFFF to Impacted Water Supply to Class Action Lawsuit

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Background/Objectives. This case study investigates the historical use of aqueous film forming foam (AFFF) at two federally-owned testing/training facilities that has resulted in the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater. Residential properties are located downgradient of these two federal properties, which rely on groundwater as a potable water source. As an emerging contaminant, little is known on the long-term effects of PFAS exposure to receptors, which leads to challenges in communicating information to affected residents and other stakeholders that include local politicians, Public Health officials, environmental departmental representatives, the media, and ultimately, lawyers when a Class Action suit is launched. How are engineers and scientists supporting their clients in dealing with this, while trying to further satisfy scientific data needs and requests from multiple parties with diverging priorities?

Approach/Activities. Based on the persistence of this class of contaminants, early communication with downgradient residents began prior to any off-site potable water sampling and continued after confirmation of the presence of PFAS in certain private water wells. Communication of information was provided through a series of outlets including written communication, town hall meetings and development of a PFAS Working Group comprised of a resident's committee, local municipal and Public Health officials, Federal Department representatives, including the Federal Health Department, and the creation of a dedicated telephone hotline. Media coverage played a significant role in driving decisions from a political perspective. Limited knowledge regarding PFAS by most stakeholders led to many early decisions being based on a very precautionary approach, including wide commitments for on-site targeted remediation of shallow soils atop a complex fractured bedrock aquifer, on-going water sampling and treatment, and additional off-site work.

The decision for on-going sampling is based on the risk tolerance of the client, influenced by the stakeholders and media perception. For well-researched chemicals, detectable concentrations below Applicable or Relevant and Appropriate Requirements (ARARs) would not identify the need for on-going sampling. However, given the limited scientific information available for PFAS, the presence of detectable concentrations can trigger continued sampling and long-term treatment of the potable water supply, even below ARARs. Challenges have included (1) complex sampling, (2) evolving analytical techniques, (3) development of new ARARs; (4) the identification of new off-site sources of PFAS; (5) communicating the new PFAS information to stakeholders, including residents and government officials; and (6) responding to client requests in support of the class action lawsuit defense.

Results/Lessons Learned. PFAS Science is not yet where it needs to be for engineers and scientists to provide answers/solutions to clients and affected residents with a high level of certainty. Decisions are therefore based on the precautionary approach. This can be both frustrating and stressful for all parties. With new information becoming available as research and government agencies continue to study and understand PFAS, some of it may help, while some of it may further complicate what has been said or done. The current limitations

significantly impact how to best communicate risks and proposed next steps to a broad audience while maintaining trust and credibility.