CLIENT ALERT:

20 December 2023

Regulatory Drivers and Pragmatic Considerations for Transition to PFAS-Free Firefighting Foams

THE CHALLENGES, RISKS, AND COST-SAVING OPPORTUNITIES

Sustainability is our business

Drivers for Transitioning to PFAS-Free Firefighting Foams

As global restrictions on per- and polyfluoroalkyl substances (PFAS) continue to expand and as fluorine-free firefighting foams[1] gain credibility and acceptance by key stakeholders (e.g., government, fire protection experts), federal and state restrictions[2] on the use of PFAS-containing firefighting foams (e.g., aqueous film-forming foams, "AFFF") are advancing and in some cases moving into enforcement. This means that companies should be developing and implementing plans to transition from AFFF to fluorine-free firefighting (F3) foams. Due in large part to governmental research programs like the Strategic Research and Development Program and Environmental Security Technology Certification Program (SERDP/ESTCP)[3], industry's confidence in F3 foam is increasing and many companies are already transitioning away from traditional PFAS-containing firefighting foam ahead of regulatory requirements.

Challenges and Risks

Some of the desirable physical and chemical properties of PFAS that made them useful for applications like fire suppression are presenting challenges in this transition to F3 foam. Specifically, residual PFAS in the wetted interior of fire suppression equipment (e.g., pipes, tanks, flow control valves, sprinklers, etc.) withstand during cleaning efforts (Lang et al. 2022)[4]. Without proper pre-cleaning surface characterization[5], seemingly non-detect concentrations of PFAS within water rinses may appear to have satisfactorily flushed PFAS from the equipment only to realize PFAS "rebound"[6] within the new F3 foam.

The cost, associated operational downtime, waste generation, and potential for PFAS "rebound" into F3 foam, are all challenges to an organization transitioning away from PFAS-containing firefighting foams:

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- It is common to consider the cost-to-benefit relationship of replacing pieces of equipment versus cleaning them. For example, a flow control device or a proportioner may be too challenging to reliably clean and can be more easily replaced, whereas long stretches of buried piping may be more advantageously cleaned.
- Many operations related to a business may require on-call fire suppression capabilities that cannot proceed when a fire suppression system is offline to facilitate extended cleaning.
- Whether fire suppression equipment is replaced, requiring offsite disposal of PFAS-contaminated equipment (e.g., into a landfill), or whether large volumes of liquid waste is generated during equipment flushing, PFAS waste will be generated during F3 foam transitioning. Proprietary cleaning approaches often generate several times more liquid waste containing PFAS that needs to be treated (a significant cost implication).
- The answer to the question "how clean is clean?" remains unanswered in many jurisdictions and regardless of the cleaning approach implemented, data suggests that some PFAS "rebound" into the F3 foam may be inevitable.

Navigating the Market of Proprietary Approaches to AFFF Cleanout

Considering evidence of PFAS "rebound" within F3 foams following water rinsing, research and development efforts have generated several proprietary approaches to (enhance, aid) cleaning residual PFAS residual PFAS from fire suppression equipment using some combination of heat, surface abrasion, and/or chemical solvency (e.g., FluoroFighter, PerFluorAd, PFAScrub, Mines Super Sauce, Comprex, LifeClean, etc.). Concerted cleaning of fire suppression equipment for PFAS residuals will remove more PFAS than triplicate water rinsing; however, initial data from cleaning demonstrations suggest that regardless of the proprietary cleaning approach, some degree of PFAS "rebound" within the F3 foam are probable.

While organizations will stand behind their proprietary solution, which comes at a premium cost, companies should be wary if the extra cost results in a solution that will meet with their business and risk management objectives.

[1] Department of Defense. 2023. *Fire Extinguishing Agent, Fluorine-Free Foam (F3) Liquid Concentrate, for Land-Based, Fresh Water Applications.* MIL-PRF-32725. January 6.

[2] Bryan Cave Leighton Paisner LLP. 2023. *PFAS in Firefighting Foam (AFFF) and Equipment: State-by-State Regulations*. Updated August 2023.

[3] Strategic Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP), 2023.

[4] Lang, J. R., J. McDonough, T. C. Guillette, P. Storch, J. Anderson, D. Liles, R. Prigge, J. A. L. Miles and C. Divine. 2022. *Characterization of per- and polyfluoroalkyl substances on fire suppression system piping and optimization of removal methods*. Chemosphere 308(Pt 2): 136254.

[5] Eurofins. 2023. *Zwitterionic, Cationic, Anionic, Total Surfactants*.

[6] Ross, I. 2023. *Is Decontamination of PFAS From Fire Suppression Systems Required?* Journal of Industrial Fire Fighting The Catalyst: 48–51.

How ERM is Helping our Clients

Before your team decides upon an AFFF transition strategy, consider having a candid conversation with our knowledgeable staff. Rather than defaulting to the presumption that a proprietary cleaning approach is required for your AFFF transition, our teams can collaborate regarding pre-cleaning characterization, the relevant regulatory requirements, "how clean is clean enough" with respect to your company's business and risk management objectives, waste management and waste minimization considerations, and post-transition characterization. Our technology agnostic staff is helping clients save hundreds of thousands of dollars by providing a clear-eyed, honest evaluation of options and practical strategies considering the state of current technologies and their company's priorities.

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