

CONCURRENT SESSION 1 – DECISION SUPPORT

Clean or Replace? Decontamination Framework for Firefighting Equipment and Hangers

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Introduction: Many aqueous film forming foam (AFFF) delivery systems in aircraft hangars and firefighting vehicles may require thorough cleaning to avoid ongoing environmental impacts from residual per- and polyfluoroalkyl substances (PFAS) within those systems. Though replacement AFFF formulations are being introduced, existing residuals and legacy contamination within these AFFF delivery systems are likely to continue to discharge PFAS. Anecdotal and vendor supplied cleaning methods exist, but it is unclear whether they are effective for the ultra-trace levels of concern. Thus, current operational parameters may need to be adjusted to meet the challenges presented by PFAS. Currently, no framework is available for evaluating the cost and environmental impact of cleanup compared to the costs of replacing components and systems.

<https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/ER20-5361>

Benefits: The primary goal of this project is to provide data and information to refine existing cleanup guidance for firefighting systems, specifically hangar systems and Aircraft Rescue and Firefighting (ARFF) vehicles impacted by PFAS. The expected overall benefit of this project is the development of a standardized cleanup framework based on a toolbox of options utilized across the DoD and civilian aviation firefighting community which could potentially lead to substantial cost savings.

Key aspects: (1) A project advisory workgroup consisting of experts from both the relevant DoD and civilian communities. The workgroup provides expertise and helps focus the project on its most beneficial endpoints; (2) Cleaning approaches, optimized for waste minimization by modeling the hydraulics of piping systems and the sorptive behaviors of PFAS to the firefighting systems. The developed modeling approach allows results to be extended to a multitude of systems in existence of varying ages, resulting in site- and vehicle-specific decontamination challenges; and (3) Sampling protocols designed to verify efficacy and avoid false assurance of cleanliness. These protocols address challenges caused by unique properties of persistent, ultra-trace contaminants such as PFAS.
