PROJECT FACT SHEET

PROJECT – EVALUATION OF FATE OF PER-AND POLYFLUOROALKYL SUBSTANCES IN AND ON MILITARILY RELEVANT SUBSTRATES

Objective

Solutions are needed to decontaminate firefighting delivery systems in aircraft hangars or on firefighting vehicles, combined with environmentally acceptable treatment of any rinsate or residue derived from the cleaning process. As firefighting delivery systems have been used with Aqueous Film Forming Foams (AFFF) over the last several decades, per- and polyfluoroalkyl substances (PFAS) have become entrained in material those systems are made of, slowly being leached out each time the system is used. The DoD is working aggressively to address the national PFAS issue in a cohesive, consistent manner while coordinating and communicating with external stakeholders. We are making substantial progress toward understanding the Department's use of AFFF and researching fluorine-free alternatives to AFFF; monitoring and communicating information on the health effects of human exposure to PFAS; establishing policies and collecting data to track PFAS cleanup progress and costs; and supporting research and development efforts for all of these activities. This project on the evaluation of the fate of PFAS on substrates works to further those goals in research and development. The objective of this project is to study the absorption of PFAS into relevant substrates, such as plastics, rubbers, glass and metals to determine effective ways of removing the PFAS for cleaning firefighting delivery systems.

Technology Description

Preliminary studies have made it conspicuously clear that there is a capability gap with respect to predictably decontaminating surfaces that have been exposed to PFAS. We do not know when, or if, containers such as AFFF storage tanks, hoses, plastics, or surfaces such as concrete or asphalt are free of PFAS, and currently we lack a reliable test method to evaluate them. This uncertainty creates complicated environmental issues for both remediation of old training and response sites as well as transition to new, safer, or more environmentally friendly foams where they will come into contact with equipment and surfaces that once contacted legacy foams. One approach might be to dispose of and replace all materials possibly contaminated by C8 foam, but given then ubiquity of PFAS and the specialization of such equipment, this whole-cloth replacement is not cost effective.

The project plans on answering the following questions: What combination of solvent(s) and protocols are effective to remove PFAS from a surface and achieve concentrations below the currents standard for the limit of detection? This investigation will utilize approaches that incorporate multistage rinsing, solvent soaks, pH adjustment, and physical scouring.

Benefits

Current firefighting delivery systems (both in vehicles and in hangars) and firefighting training facilities are contaminated with PFAS compounds and will have to be cleaned or replaced. Current estimates expect over 20 years (at current production rates) to replace all the firefighting systems currently in use, and the expense would be astronomical. Cleaning would allow the use of the current systems with the new fluorine free foams and save the DoD millions of dollars. This study is designed to answer some basic questions on the fate of PFAS on common surfaces, and to offer insight into potential cleaning techniques.