

Strategic Environmental Research and Development Program (SERDP)

FY 2018 STATEMENT OF NEED

Environmental Restoration (ER) Program Area

DEFINING KNOWLEDGE GAPS IN THE UNDERSTANDING OF PER- AND POLYFLUOROALKYL SUBSTANCES IN THE SUBSURFACE

1. Objective of Proposed Work

The objective of this limited-scope Statement of Need (SON) is to address specific knowledge gaps identified in the May 2017 SERDP and ESTCP Workshop on Management of Aqueous Film Forming Foam (AFFF)-Impacted Sites. The knowledge gaps of interest are those that require collection and analysis of existing data on per- and polyfluoroalkyl substances (PFASs), not additional experimental work. Specific areas of interest are as follows:

- Develop the basis for an approach for assessing PFAS risks to threatened and endangered (T&E) species. Such an approach should be summarized in a white paper and consider common T&E species at AFFF-impacted sites, associated exposure factors for PFASs, and suitable surrogate (non-T&E) species. Available toxicological information for the surrogate species also would be needed, including the No Observed and Lowest Observed Effect Levels (NOEL and LOEL), respectively.
- Form the basis for future development of innovative on-site technologies for concentrated PFAS waste streams by summarizing the characteristics of waste streams from common approaches as well as theorizing the waste composition of potential innovative approaches.
- Define lines of evidence for assessing effectiveness of proposed remediation technologies based on the current state of the science.

Proposers are encouraged to view the Workshop Report summarizing the research, demonstration, and technology transfer needs prior to submitting their proposal.

<https://serdp-estcp.org/Featured-Initiatives/Per-and-Polyfluoroalkyl-Substances-PFASs/2017-Workshop-Report-on-Per-and-Polyfluoroalkyl-Substances>

2. Expected Benefits of Proposed Work

Addressing the needs described above will provide a basis for future research that meets critical needs in effectively managing AFFF-impacted sites. Research should lead to improved management of PFAS sites by facilitating the establishment of more cost-effective and efficient remedial action plans that are protective of human health and the environment.

3. Background

AFFF formulations have been used by DoD since the 1970s to suppress fires, and there are hundreds of sites with associated PFAS contamination. The DoD used AFFF mixtures containing

significant quantities of PFOS and related perfluoroalkyl sulfonates such as PFHxS until 2002, when production stopped, although the DoD continued to use PFOS-containing AFFF stocks for some time after. Although the DoD's legacy use of AFFF included various fluorotelomer-based formulations, the vast majority of DoD's environmental liability likely results from the use of PFOS-based AFFF. Additional research on PFASs is timely given the USEPA's recent drinking water health advisories for two common PFASs, PFOA and PFOS, as well as the numerous states that are beginning to promulgate drinking water standards.

SERDP and ESTCP have been funding research on AFFF contamination for several years, to improve PFAS analysis, to develop tools for assessing the fate of PFASs in the subsurface, and to evaluate the potential for in situ remediation. Research is ongoing to evaluate a range of potential remediation technologies and improved AFFF site characterization and technology transfer regarding PFAS contamination. To provide strategic guidance for future research and demonstrations on management and remediation of AFFF-impacted sites, SERDP and ESTCP conducted a workshop on May 2-3, 2017 in Washington, D.C. The objectives of the workshop were (1) to review the current state of the science regarding sources of PFAS contamination, particularly AFFF, (2) to evaluate currently available and developing technologies for characterization and remediation of AFFF sites, and (3) to identify research and demonstration needs to improve remediation performance, efficiency, and ultimately reduce the cost of managing AFFF sites.

During the workshop, participants identified several areas in which collection and analysis of existing data was needed to guide future research efforts. Identified areas included data to improve identification of exposure pathways to T&E species, to improve on-site PFAS waste treatment, and to better assess remedial treatment technologies. Additional discussion of each of these areas is provided in the Workshop Report.

4. Cost and Duration of Proposed Work

Limited-scope proposals for funding up to \$200,000 and duration of approximately one year are sought. Such proposals may be eligible for follow-on funding if they result in a successful initial project.

5. Point of Contact

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For proposal submission due dates, instructions, and additional solicitation information, visit the [SERDP website](#).