

**Strategic Environmental Research and Development Program  
(SERDP)**

**FY 2023 STATEMENT OF NEED**

**Weapons Systems and Platforms (WP) Program Area**

**IMPROVED PERFORMANCE OF PFAS-FREE FIREFIGHTING  
FORMULATIONS**

**1. Objective of Proposed Work**

The objective of this Statement of Need (SON) is to identify and develop per- and polyfluoroalkyl substance (PFAS)-free firefighting formulations that approach the performance characteristics detailed in the latest revision of MIL PRF 24385 and can enhance fire-suppression performance across multiple scenarios. Proposals should address development of a PFAS-free firefighting formulation that is effective under one or more of the following scenarios:

- Firefighting operations at extreme temperatures (as low as 32 degrees F and up to 125 degrees F)
- Firefighting operations involving various fuels to include polar solvents, gasoline, or gasoline alcohol blends
- Firefighting operations with salt and freshwater

Proposals should establish a lifecycle framework that can mature as the technology progresses through the acquisition process. This tiered approach aims to develop and document a minimum data set at each stage of research and development that can be used to make informed decisions and streamline transition to an acquisition program. The sustainability analysis may include varying depths of data and information that can inform the goal and scope of an analysis; the identity and quantity of relevant inputs and outputs to the system; and the estimation of life cycle impacts and costs.

**2. Expected Benefits of Proposed Work**

Program Managers, installations, and warfighters across all services would benefit from enhancement of fire suppression performance. No currently available PFAS-free firefighting formulation meets all the fire extinguishment requirements in MIL-PRF-24385. New PFAS-free firefighting formulations will enable sustained manufacture and use of fire suppression technologies by meeting environmental requirements while maintaining equivalent performance to ensure safety of DoD personnel at airfields, onboard ships, and while deployed in extreme environments.

**3. Background**

The 2020 National Defense Authorization Act (NDAA) prohibits the use of currently approved, PFAS-containing aqueous film-forming foam (AFFF) beginning October 1, 2024; however, none

of the currently available, PFAS-free fire suppressants meet the stringent requirements of MIL-PRF-24385. It is undesirable to relax the fire extinguishment time requirements given the safety asset-protection requirements unique to the U.S. Military. It is also undesirable to increase the PFAS-free foam application rates due to environmental and equipment capacity concerns. The Department of Defense will establish a new performance specification related to shore-based operations and as technology progresses, it is expected that additional requirements will be added as amendments to the specification.

SERDP is currently funding research to develop PFAS-free firefighting formulations, but additional research and development is required to meet military firefighting requirements in extreme environments and with multiple fuel sources. For efficient fire extinguishment, several physical and chemical property requirements are specified, such as foam spreadability, foam quality, ability to cool fire, and ability to disrupt the fire. Current foam formulations rely on cooling, film formation, and limiting oxygen to the fire with a stable foam blanket. The ability of available PFAS-free firefighting formulations to extinguish liquid pool fires has been shown to rely primarily on bubble quality. These physical properties have not been rigorously studied at extreme conditions.

#### **4. Cost and Duration of Proposed Work**

The cost and time to meet the requirements of this SON are at the discretion of the proposer. Two options are available:

**Standard Proposals:** These proposals describe a complete research effort. The proposer should incorporate the appropriate time, schedule, and cost requirements to accomplish the scope of work proposed. SERDP projects normally run from two to five years in length and vary considerably in cost consistent with the scope of the effort. It is expected that most proposals will fall into this category.

**Limited Scope Proposals:** Proposers with innovative approaches to the SON that entail high technical risk or have minimal supporting data may submit a Limited Scope Proposal for funding up to \$250,000 and approximately one year in duration. Such proposals may be eligible for follow-on funding if they result in a successful initial project. The objective of these proposals should be to acquire the data necessary to demonstrate proof-of-concept or reduction of risk that will lead to development of a future Standard Proposal. Proposers should submit Limited Scope Proposals in accordance with the SERDP Core Solicitation instructions and deadlines

#### **5. Point of Contact**

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For Core proposal submission due dates, instructions, and additional solicitation information, visit the Funding & Opportunities page on the [SERDP website](#).