



Federal Aviation Administration

Memorandum

Date:

To: Michel Hovan, PhD, Manager, Airport Technology R&D Branch, ANG-E26

From: John Dermody, Director of Airport Safety and Standards, AAS-1

Prepared by: Marc Tonnacliff, ARFF Specialist
Airport Safety and Operations Division, AAS-300

Subject: Request for Research and Development Support: Research into the reduction or elimination of PFCs in Class B Fire Fighting foams

Purpose:

Over the years there has been a growing concern about the potential health and environmental impact that aqueous film-forming foams (AFFF) used by Aircraft Rescue and Firefighting (ARFF) Departments can have at airports and surrounding communities. The main concern is Perfluorinated Chemicals (PFCs) that are found in AFFF concentrates; specifically, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Both PFOS and PFOA are considered persistent, bio-accumulative and toxic by US Environmental Protection Agency (EPA) standards. Production of AFFF concentrates with PFOS stopped in 2002 and it is believed that the vast majority of the supplies at civil airports have been consumed by users however; they may remain in the environment. Current AFFF concentrates at airports still have various levels of PFOA. The "long-chain" chemistries have an 8 Carbon chain or greater and the "short-chain" chemistries have a 6 Carbon chain or lower. The carbon chain length is where the breakdown to PFOA in the environment exists. While PFOA was never an ingredient in AFFF, the C8 products would break down in the environment to PFOA. Because of this, under an EPA PFOA Stewardship program, as of December 31, 2015 all AFFF formulations use the C6 chemistry which does not break down to PFOA in the environment.

Though foam manufactures have worked diligently to reduce presence of PFOS in their AFFF concentrates, the PFC environmental concerns still linger. There are also several other PFC compounds in the current AFFF formulas whose environmental and health hazards are not yet known. Recently new AFFF formulas known as Fluorine-Free Foams (FFFs) have shown potential to replace current AFFFs however the potential hazards of the chemicals used in lieu of PFC is not yet known.

Research is needed to investigate the reduction or elimination of PFC's and other chemicals which may pose either health or environmental hazards.

Scope of Work:

At a minimum, your study should include:

- Determine which FFFs or other foams have shown potential to replace current AFFFs
- Conduct fire tests using selected FFFs or other foams to determine if they have the similar fire extinguishment performance as current AFFFs

Final Report:

At a minimum, the final report should include:

- Results from study of potential replacement foams;
- Recommendations for the modification of existing ARFF standards or procedures, if applicable.

Headquarters Project Officer:

The project officer for this task is Marc Tonnacliff (202-267-8732, marc.tonnacliff@faa.gov).

Requested Action:

Please provide the assigned project officer a project plan, including milestone schedules and funding to accomplish the study.