



EXPLORING ALTERNATIVE APPROACHES FOR FIRE PROTECTION


*Continuing safe and efficient operations
while searching for PFAS-free foams.*

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Fire safety and suppression have long been integral to the makeup of commercial airport operations. For decades, aqueous film-forming foam (AFFF) has been a primary material that satisfies federal and state regulations and fire code requirements. This approved and resilient suppression agent has a proven track record of suppressing and stopping

the propagation of fire, thus minimizing the impact of fire events on critical airport operations.

While AFFF continues to provide a reliable fire suppression solution for airports, the environmental impacts of perfluoroalkyl and polyfluoroalkyl substances (PFAS) — the compounds that make up traditional AFFF —



have become the focus of emerging regulations. The physical properties of PFAS serve to effectively smother, suppress and prevent burn back on pool fires; however, if released to the environment, the chemical properties that make AFFF an effective fire suppression agent also make PFAS difficult to remediate or treat.

In recent years, environmental focus on PFAS has caused the Federal Aviation Administration (FAA) and other agencies to reconsider existing specifications regarding the use of AFFF. The FAA currently requires the use of PFAS-containing AFFFs for firefighting response due to the performance of these products. Additionally, fire codes in some jurisdictions and/or insurance underwriters may require AFFF suppression systems for protection of aircraft hangars or certain operations in bulk jet fuel storage facilities.

SEEKING AN ALTERNATIVE

The FAA is working to identify PFAS-free alternatives that provide a safer alternative to PFAS-containing AFFF without sacrificing fire suppression performance, but until PFAS-free alternatives are identified and proven the FAA and other agencies will continue to require the use of fluorinated AFFFs. Before these new products can be properly vetted, successfully navigating challenges associated with PFAS will require airports to balance the need to use a fluorinated product with environmental stewardship. To effectively navigate this challenge, PFAS inventories, site investigations and treatment solutions will be required.

While the fire protection industry develops alternatives to fluorinated AFFF suppression agents, airports should ask themselves: What can be done now to mitigate environmental exposure from PFAS-containing AFFF? Often, the answer to this complex question can be found by taking a holistic approach to the fire protection strategies that protect airport facilities.

DEVELOPING A SOLUTION

The solution is not a simple answer, requiring a team that understands and can lay out all the options. For existing facilities with AFFF systems, some strategies can include:

- Implementing capture and containment upgrades to prevent PFAS from reaching the environment.
- Retooling the AFFF system to reduce the amount of AFFF required or potential leak points.
- Upgrading the existing AFFF system to remove the need to put AFFF on the ground during monthly or annual testing and maintenance.
- Modifying the releasing system to reduce inadvertent discharges that lead to potential environmental cleanup.
- Reworking systems, if appropriate, for fluorine-free fire foam.

- Reassessing applicable codes and hazards to remove the need for an AFFF system.
- Following a performance-based design approach focusing on all aspects of fire protection to mitigate or eliminate the hazard and remove the need for an AFFF system.

The approach for a new facility is similar but requires a stronger focus on eliminating the need for PFAS-containing fire foams by applying local fire codes and working together with other disciplines and officials to mitigate or eliminate potential hazards. When possible, it is preferable to remove the need for firefighting foam solution infrastructure as foam solutions are the last resort. There are often many other options for preventing, containing or stopping fire propagation before foam is placed on a pool fire.

REMAINING PREPARED

Looking back, there was at first a push to remove AFFF solutions containing long carbon chains. Now there is a concern regarding the shorter-chained PFAS that were present in the replacement firefighting foams. But what will the future bring? If fluorine-based foams are replaced with nonfluorine-based foams, then one chemical is simply replacing another. It could be better to eliminate the need for a chemical-based fire suppression system where possible.

Until testing of fluorine-free products can return more reliable results in fire suppression, continued use of PFAS-containing AFFF will be the norm. To remain in regulatory compliance and limit future environmental liability associated with fire protection — while still providing continued, resilient operations — airports and airlines may need to take a closer look at their various systems, the risks associated with those systems and available options. This may also mean developing renewed procedures for managing discharged AFFF and strategies for addressing areas where legacy AFFF use has resulted in the occurrence of PFAS in the environment.

Understanding the options available today allows airports to anticipate the nature of future regulations to find new solutions to old problems, whether in an existing facility or in the creation of a new facility. Considering new and alternative approaches as they become available will help airports maintain safe and efficient operations.

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