PFAS Cleaning for Fire Suppression Systems

Shifting regulations and the potential for forthcoming litigation has motivated many training and emergency response foam users to transition from foams containing PFASs (C8/C6) to fluorine-free firefighting (F3) foams, which are now widely available and being used in a variety of industries for effective fire protection.

Contaminant Risk

PFASs adhere to surfaces in contact with fluorinated foams and self-assemble to form a resilient coating in fire suppression systems. Replacing existing foam in suppression systems requires management of self-assembled layers of PFAS because PFAS can rebound into replacement foams even after foam transition, coating internal surfaces and system components with waterproof layers that are resistant to dissolution or flushing with water.

A Successful, Biodegradable Solution

Arcadis has developed an effective biodegradable cleaning agent (V171) to clean PFAS layers from fire suppression systems previously containing C8/C6 AFFF, FFFP and FP. The V171, in conjunction with a proven procedure for PFAS cleaning applications, will remove PFAS by disrupting self-assembled layers on foam-wetted surfaces, providing assurance that PFAS impacts in newly installed foam are minimized. Using an effective cleaning agent in place of water reduces foam transition costs by reducing or eliminating time-consuming re-work, mitigating contamination of replacement foams and avoiding widespread component replacement. Preventing PFASs contamination of replacement foams while transitioning away from C8/C6 foams is critical.

Additionally, Arcadis uses innovative technologies to regenerate the biodegradable cleaning agent for reuse, minimizing disposal costs.

Reducing Complications and Uncertainties

Transitioning away from firefighting foams containing C8/C6 PFASs requires a combination of engineering skills and knowledge of environmental science and policy.

Arcadis Foam Transition Services

Arcadis offers a broad scope of services for foam transition including:

- Fire system upgrade planning and permitting
- Replacement foam selection
- Fire system design modifications and upgrades
- Containment system upgrades
- Piping and storage system cleaning
- Waste characterization and disposal
- Foam Assurance
- Proportion testing to meet NFPA requirements
- Reporting and O&M Manual Updates

About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

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Related Content

PFAS Solutions Site

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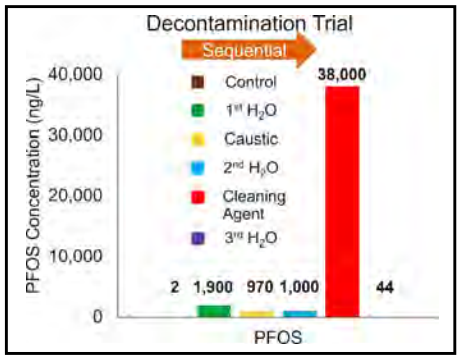
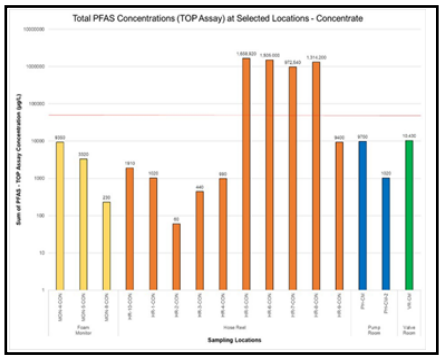
Foam transition is not as simple as "Foam Out / Foam In"

Increasing regulatory attention on PFAS shows that successful suppression system cleanout is growing in importance; however, the development of a foam transition program that includes PFAS cleaning can be daunting. The Arcadis team, including leading PFAS experts, works as your trusted partner to develop a foam transition program and execute PFAS cleaning activities that will reduce the complication and uncertainty around regulation and equipment reuse.



Demonstration that the V171 cleaning agent is the most effective reagent.



PFAS residual up to 1.6 g/L in F3 foam lines after water flushes.

Project Experience

Issue	Solution	Case Study
Fire system rework from inadequate system transition design	Combined team: Fire and Environmental Engineers redesigned foam supply system	(1) Airline replaces concentrate pumps and tanks after initial design failure
Foam PFAS analysis inappropriate	TOP assay employed to detect and quantify PFASs	(2) TOP assay successfully used to identify proprietary PFASs in foams
PFAS rebound into F3 foams	Perform suppression system cleanout using Arcadis Cleaning Agent V171	(3) Successful F3 foam replacement following V171 cleaning
Equipment Replacement vs. Cleanout and Retain	Combined team performs Cost Benefit Analysis (CBA) to compare cleaning cost vs. component replacement cost	(4) Airline uses CBA to develop cost effective transition plan that minimizes expenditure

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