

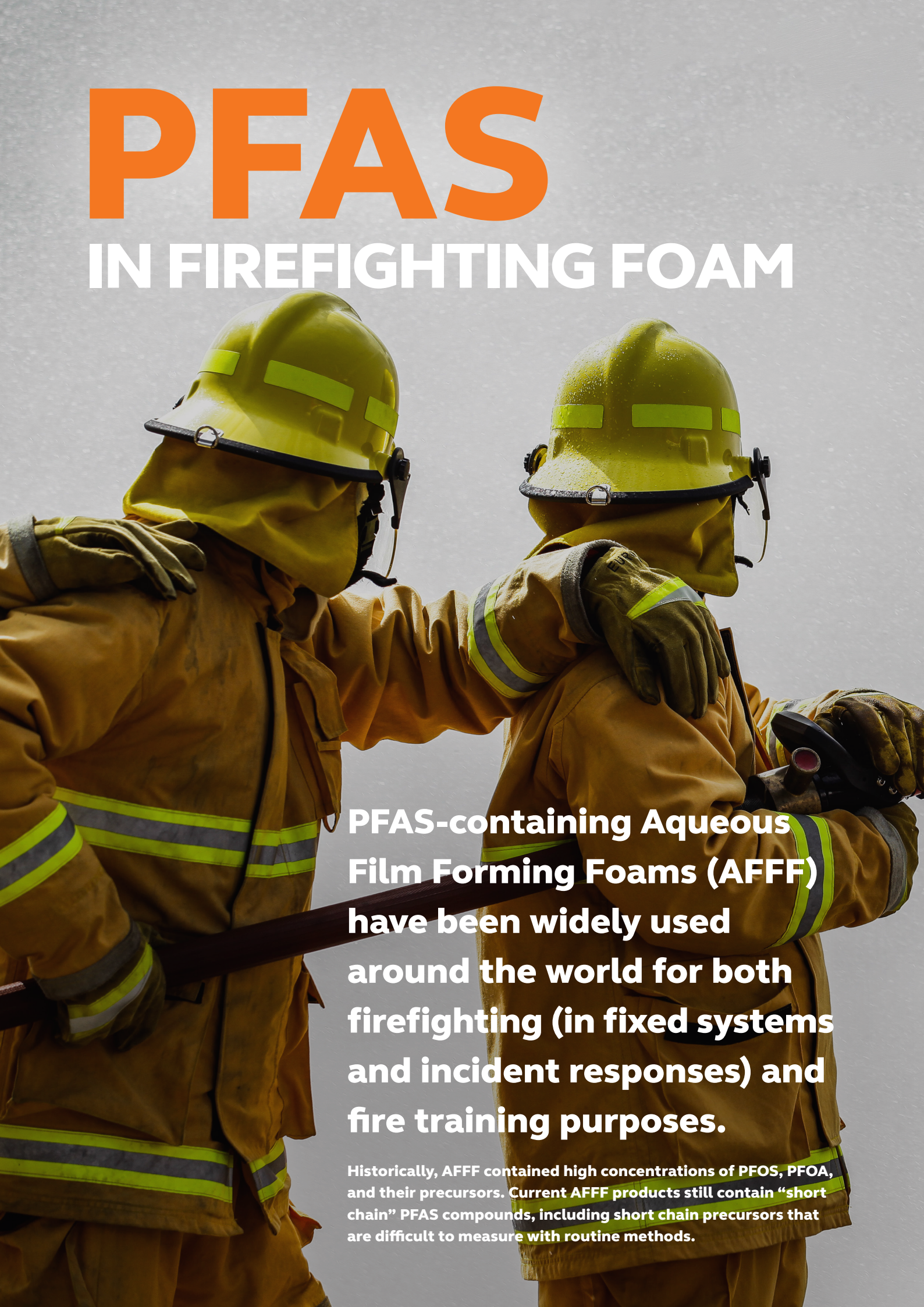


FIREFIGHTING FOAM

PFAS SOLUTIONS


PFAS

IN FIREFIGHTING FOAM



PFAS-containing Aqueous Film Forming Foams (AFFF) have been widely used around the world for both firefighting (in fixed systems and incident responses) and fire training purposes.

Historically, AFFF contained high concentrations of PFOS, PFOA, and their precursors. Current AFFF products still contain “short chain” PFAS compounds, including short chain precursors that are difficult to measure with routine methods.

A firefighter's nozzle is visible on the left side of the image, spraying water against a grey wall. The water creates a misty spray that fills the left portion of the frame. The background is a solid grey color with a subtle texture. At the bottom of the image, there are several concentric, semi-circular bands in shades of grey and white, creating a decorative, wave-like pattern.

Many sites where AFFF products were used have been identified as significant sources of PFAS contamination to soil and groundwater, posing a potential risk to human health and the environment.

Arcadis focuses on providing sustainable solutions to characterize, manage, and remediate PFAS-impacted sites and protect drinking water sources as a first priority. We offer foam changeout and cleanout services and sustainable fire training area design to help minimise future potential risk related to PFAS.

OUR SOLUTIONS

**FIREFIGHTING FOAM TRANSITION
AND MANAGEMENT PROJECTS ARE
UNDERWAY IN THE US, EU-UK, AND
AUSTRALIA FOR AIRPORTS, AEROSPACE,
AND DEFENSE SECTOR CLIENTS**

**Taking a proactive
approach to mitigating
the potential risks
that PFAS-containing
foams can pose to
human health and the
environment, Arcadis
offers several solutions.**

FIREFIGHTING FOAM CHEMISTRY AND REGULATIONS

AFFF chemistry has evolved over time and varies by manufacturer. Arcadis has a detailed longitudinal understanding of AFFF PFAS content, how to assess foams for PFAS content that may be difficult to detect with standard methods, and how historical and current foam ingredients may be subject to regulations across many jurisdictions globally.

F3

FIREFIGHTING FOAM TRANSITION

While most firefighting foams no longer contain PFOS or PFOA, a complete transition to fluorine-free foams (F3) may be feasible and appropriate to reduce ongoing risks of contamination from other PFAS compounds and residual contamination. Foam transition requires a thorough cleanout of the previous foam material to avoid cross-contamination of the F3 material. F3 foams are becoming more common in Europe and Asia as they are effective, biodegradable and reduce the possibility of future environmental liabilities associated with PFAS. This, in turn, can provide a net cost benefit to a foam replacement program.

CONCRETE SURFACE SEALANTS

In order to prevent releases of PFAS from concrete infrastructure, Arcadis has partnered with manufacturers to trial and develop surface sealants that manage the leaching of PFAS.

Care is needed when assessing the suitability of a site and the proposed surface sealants, as factors such as thermal stability, degradation over time, and ongoing maintenance need consideration. Arcadis can provide our clients with advice on a wide range of polymer-based coatings to manage PFAS in impacted concrete

PFAS TRANSITION PROGRAM

With a detailed understanding of the lifecycle and treatment of PFAS-containing foams, Arcadis' transition strategies to F3 foams include decontamination, disposal of old foams, replacement of equipment, and testing of new foam systems. Arcadis developed a solvent blend that is effective at removing PFAS residuals from concrete and stainless steel. Our transitioning programs also combine environmental management with fire protection engineering, fire safety strategies, and fire risk assessments. In this way, Arcadis can ensure that our programs provide a framework to manage regulatory concerns and potential liabilities.



THE ARCADIS STORY

Arcadis has a long history of management and remediation of PFAS impacts, starting over 14 years ago with our first projects in Belgium, Germany and the UK. Arcadis now has **more than 75 projects** in our portfolio, representing **over 300 individual sites** in **12 countries**. Our expert team consists of **over 100 innovators**, including chemists, toxicologists, hydrogeologists, geologists, risk assessors and remediation engineers.

Arcadis is the leading global Design & Consultancy firm for natural and built assets, tracing its roots back to the Association for Wasteland Redevelopment in the Netherlands in 1888. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services, **we work to deliver exceptional and sustainable outcomes.**

With over 27,000 people in over 70 countries and a generated €3.3 billion in revenue, Arcadis' rich history lends the perfect foundation for the innovative solutions we have now become renowned for.

27,000

PEOPLE



**WE WORK
TO DELIVER
EXCEPTIONAL
— & —
SUSTAINABLE
OUTCOMES**

70

COUNTRIES

€3.3

BILLION IN REVENUE

MINIMISE YOUR IMPACT TODAY

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