

Key Points

- **Per- and Poly-fluoroalkyl Substances (PFASs) were present in 3M AFFF™ and ATC™ firefighting foams, previously used by Fire & Rescue NSW (FRNSW).**
- **FRNSW used Training Foam Concentrate, and other fluorine- free foams for most training exercises.**
- **AFFF™ and ATC™ were withdrawn from service within FRNSW in 2007.**
- **At present, there is no substantive evidence that PFASs cause harm to human health. There are currently no clinical guidelines on what blood concentrations might be harmful to humans.**
- **FRNSW has engaged an independent clinical toxicologist to conduct a series of information sessions and provide expert advice to current and retired firefighters who may have concerns.**
- **To register for information sessions, click [here](#).**

What are PFASs?

Per- and Poly-fluoroalkyl Substances (PFAS) are a group of manufactured chemicals that were first produced in the 1940s and 1950s. These chemicals have unique properties that include water repellence and molecular stability, and as such they were used in the manufacture of numerous commercial and industrial products such as upholstery, textiles, hydraulic fluid, non-stick cookware and Scotchguard™.

PFAS were also present in two types of firefighting foams previously produced by the 3M company: Aqueous Film Forming Firefighting Foams (AFFF™) and Alcohol-Type Concentrate (ATC™). The manufacture of both products has now ceased.

Two main groups of Per- and Poly-fluoroalkyl Substances used in industry are perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

PFOS has recently been listed by the Stockholm Convention as a Persistent Organic Pollutant. In Australia there are no

clear guidelines for safe concentrations of either PFOS or PFOA in human blood or in the environment. However, in 2003 the National Industrial Chemicals Notification and Assessment Scheme (NICNAS), has issued an alert recommending that PFAS based chemicals be restricted to essential uses.

How were PFCs used by FRNSW?

AFFF™ (in both 1% and 3-6% concentration) was used by FRNSW between 1976 – 2007 for Class B fires involving water-immiscible fuels. In 2007 all foams containing PFOS and PFOA were progressively removed from service and destroyed. Currently, no foams used by FRNSW contain PFOS or PFOA.

Whilst other agencies used AFFF™ during all training exercises as late as 2010, FRNSW generally used fluorine-free training foam for exercises and drills (e.g. Training Foam Concentrate) where foam was required to be used frequently and in bulk. Reserved stocks of AFFF™ and ATC™ were primarily limited to use for response to Class B fires.

What is the prevalence of PFAS?

PFAS are toxic, resistant to degradation, bio-accumulate in food chains and have a long half-life in humans. PFAS are present in Australian drinking water and have been observed concentrations between 0 – 16 ng/l and 0–9.7 ng/l for PFOS and PFOA respectively. By comparison, much higher PFAS concentrations have been observed in other developed countries including Spain, France, and the USA.

A recent Australian study found higher blood PFAS concentrations in aviation firefighters than in the general population. The study assessed 149 firefighters who were exposed to 3M AFFF™ through training and incidents, finding serum levels six to ten times higher than the general population. It should be noted that comparisons between occupation classifications are difficult due to differences in the frequency and duration of exposure to foam. For instance, the aviation firefighters that were studied each had a mandated foam training frequency of at least once every 90 days over the exposure period.

Are there any health effects associated with exposure to PFAS?

Although PFAS are a growing area of public health interest, the question of whether PFAS cause harm to human health is a subject of scientific debate. Studies have found that PFOS and PFOA can cause specific illnesses in animals such as rodents. However rodents have a different and much faster mechanism of PFAS metabolism, so these findings may not accurately represent responses within humans.

The World Health Organisation International Agency for Research on Cancer (IARC) classified PFOS as a type 2B substance, meaning that PFOA is 'possibly carcinogenic to humans'. However, PFOS has not yet been classified by the IARC. The Australian Environmental Health Standing Committee (enHealth) recently reviewed international scientific literature, but found that there was no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects.

What is the value of blood tests?

Blood tests can be performed to quantify PFOS and PFOA levels, however at this stage such test results are not clinically meaningful. Serum levels detected by blood tests do not provide an interpretable measure of health risk i.e. detecting a specific PFOS or PFOA level does not enable an assessment of real or potential adverse health effects, because little is known about any real or potential effects on humans. For this reason, the NSW Department of Health, and enHealth do not currently recommend blood testing as a diagnostic or screening measure at an individual level. Consequently, medical practitioners are not in a position to be able to provide supporting advice due to the lack of information available.

Blood tests do have value in research and surveillance when considering PFOS and PFOA exposure at a population level.

What services are FRNSW offering to firefighters?

FRNSW will facilitate a series of information sessions for retired and current firefighters, led by Professor Alison Jones. Professor Alison Jones is the Pro-Vice Chancellor (Health Strategy) and Executive Dean of the Faculty of Science, Medicine and Health, at the University of Wollongong. Professor Jones is a Clinical Toxicologist with extensive expertise in the area of toxicology exposures.

To register your interest in these sessions, please [click here](#) or visit <https://www.surveymonkey.com/r/7VDPYCC>

Where can I go for more information?

[Fire & Rescue NSW - Past use of firefighting foam - Updates](#)

[NSW Department of Health – PFOA and PFOS – Fact Sheets](#)

[Australian Government Department of Health - Per- and Poly-fluoroalkyl Substances – Factsheets](#)

Any specific questions can be directed to the PFAS Investigation project team
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