F - Zero

The Standard for Zero - Fluorochemicals

Powered by Surfactant Technologies Australia

PFAS: Why "Free" Is Not Enough - It Must Be Zero

PFAS are a group of synthetic fluorinated chemicals historically used in firefighting foams and many industrial products because of their resistance to heat, water, oil and chemicals.

In aqueous film-forming foams (AFFF), PFAS helped create fast-spreading, fuel-sealing foam blankets. While effective in fire suppression, **PFAS has left a serious environmental legacy.**

Often called **"forever chemicals,"** PFAS do not readily break down. Once released, they can persist in soil, groundwater, waterways and sensitive environments for decades - **creating long-term risks for individuals, communities, industry, wildlife and ecosystems.**

Where PFAS Can Be Found

PFAS has been used in thousands of products because it can resist heat, water, oil, grease and chemicals. Refer to table below for common examples.

This widespread use is why **PFAS contamination is not limited to one industry.** It can affect homes, workplaces, airports, defence sites, industrial facilities, farms, waterways and landfill areas.

Product/Industry	How PFAS has been used:
Firefighting foam	AFFF foams for fuel fires, airports, defence sites, fire training grounds and industrial facilities.
Non-stick cookware	Non-stick coatings such as PTFE-based cookware.
Waterproof clothing	Outdoor jackets, rainwear, uniforms and technical fabrics.
Stain-resistant carpets and upholstery	Treatments used to resist stains, oil and water
Food packaging	Grease-resistant paper, wrappers, takeaway containers, pizza boxes and some compostable packaging.
Cosmetics and personal care	Some long-wear makeup, foundations, mascara, lip products and skin products.
Paints, coatings and varnishes	Used for durability, flow, spread, stain resistance or weather resistance.
Cleaning products	Some specialist cleaners, polishes and surface treatments.
Textiles and leather	Water, oil and stain-repellent treatments.
Electronics and wiring	Wire insulation, cable coatings and specialty electronic applications.
Industrial surfactants	Wetting, spreading, leveling and surface-tension control.
Hydraulic fluids and lubricants	Specialist high-performance fluids, including some industrial and aviation uses.
Pesticides and packaging	PFAS may be present in some pesticide formulations or from fluorinated plastic containers.
Metal plating	Mist suppressants and surface treatment processes.
Semiconductors	Specialist chemicals used in advanced manufacturing.
Medical and laboratory materials	Some specialist fluoropolymer materials and chemical-resistant components.
Ski waxes	High-performance glide waxes, especially older fluorinated wax products.
Landfill and waste streams	PFAS-containing products can leach into landfill water and surrounding environments.

staustralia.com

info@staustralia.com

F - Zero
The Standard for Zero - Fluorochemicals
Powered by Surfactant Technologies Australia

Health Concerns:

PFAS exposure has been associated with cancer risk, immune effects, hormone disruption, reduced kidney function, elevated cholesterol, reproductive impacts and developmental concerns.

Because these chemicals are persistent and can accumulate over time, removing PFAS from high-use industrial products is a critical step in reducing long-term environmental and human exposure.

- Increased Cholesterol
- Lower Birth Rate
- Reduced Kidney Function
- Reproductive and Fertility Impacts
- Elevated Uric Acid Levels
- Increased Risks of Prostate, Kidney, Testicular Cancers

Cancer Risk
The International Agency for Research on Cancer has classified PFOA as carcinogenic to humans and PFOS as possibly carcinogenic to humans.

While health risk depends on the dose, compound type and exposure pathway, global research continues to link PFAS exposure with a broad range of health concerns, including cancer.

Environmental Impact:

PFAS contamination is a long-term environmental issue because these chemicals are **highly persistent, mobile and difficult to break down.** Once released, PFAS can move through soil, groundwater, waterways and sediments, spreading beyond the original point of use.

PFAS can accumulate in plants, animals and aquatic species, moving through the food chain and increasing exposure risks for wildlife, livestock and humans. Contaminated sites can require extensive water treatment, soil management and long-term monitoring, creating significant environmental, regulatory and economic impacts.

- Groundwater Contamination
- Remediation Costs
- Soil Contamination
- Food Chain Exposure
- Bio-accumulation
- Wildlife Impacts

PFAS contamination is not just a product issue - it is a long-term environmental legacy.

Once released, PFAS can spread through soil, water and ecosystems, creating persistent contamination, wildlife exposure, food-chain risks and costly remediation obligations.

Zero PFAS technology removes the source of future contamination before it enters the environment.

staustralia.com
info@staustralia.com

F - Zero
The Standard for Zero - Fluorochemicals
Powered by Surfactant Technologies Australia

Current "PFAS - Free" Regulatory Position

Jurisdiction	Main Foam Limit/ Regulatory Number	Applies To	Practical Status
EU	1 mg/L total PFAS	Sum of all PFAS in firefighting foam	Ban/restriction on placing on market and use from 23 Oct 2030
USA	1 ppb PFAS	U.S. Department of Defense procurement/MIL-PRF-32725 Fluorine-free foam benchmark	DoD procurement of AFFF above 1 ppb PFAS prohibited after 1 Oct 2023; MIL-PRF-32725 containers must state max 1 ppb PFAS
Singapore	PFOA: 25 ppb; PFOS: 10,000 ppb; PFHxS: 100 ppb	PFOA, PFOS, PFHxS, their salts and related compounds in firefighting foam	From 1 Jan 2026, Singapore phases out import/use of foams above these thresholds
NZ	No single ppm/ppb "total PFAS" limit; all PFAS firefighting foams banned from Dec 2025	Legacy PFAS foams and C6 fluorotelomer foams	PFAS foams phased out: uncontained systems by 31 Dec 2022, contained systems by 3 Dec 2025
Canada	PFOS ≤ 10 ppm residual threshold for some AFFF contexts; earlier guidance also referenced 0.5 ppm, later amended	Mainly PFOS-based AFFF/ residual PFOS in equipment	PFOS-based AFFF has been prohibited since end-2013, with limited residual exemptions. Canada is consulting on broader PFAS foam controls, including proposed treatment of all PFAS in AFFF
Japan	No single "total PFAS in foam" numeric limit identified	PFOS, PFOA and PFHxS controlled under POPs/Chemical Substances Control Law framework	Japan controls legacy PFAS foams only through manufacture, sale, handling, storage and disposal restrictions rather than a simple total-PFAS foam threshold
China	No clear national "total PFAS in foam" numeric limit identified	Primarily PFOS phase-out/ POPs-aligned controls	China has worked on phase-out of PFOS-containing firefighting foam but has no specific controls
India	No enforceable national PFAS firefighting foam numeric limit identified	No specific national PFAS foam limit found	Current literature indicates India does not yet have specific national regulatory limits for PFAS contamination

World Rankings

Rank	Jurisdiction	Practical Benchmark
1.	USA DoD	1 ppb PFAS procurement / F3 benchmark
2.	Singapore	25 ppb PFOA, 100 ppb PFHxS, 10,000 ppb PFOS
3.	EU	1 mg/L / 1,000 ppb total PFAS
4.	Australia	No single national "total PFAS in foam" numeric limit; controls vary by state/territory
5.	New Zealand	Ban/phase-out approach rather than a numeric threshold
6.	Canada	PFOS residual threshold approach, with broader PFAS foam regulation evolving
7.	Japan / China / India	No simple total-PFAS foam numeric limit identified; controls are substance-specific, POPs-aligned, or still developing

Numeric Table Reference

Unit 1 mg/L	Equivalent 1 ppm
1 ppm	1,000 ppb
1 ppb	0.001 mg/L
10 ppm	10,000 ppb

staustralia.com
info@staustralia.com

Local Regulatory Position

Jurisdiction/Standard	Current Position	Numeric Limit/Trigger
Australia – IChEMS	From 1 July 2025, PFOS, PFOA, PFHxS and related substances are prohibited from import, use, manufacture and export unless exempted	Thresholds in public guidance include 0.025mg/kg for PFOS/PFOA/PFHxS salts, 1 mg/kg for related compounds, and special installed-system foam limits
NSW	NSW amended its foam regulation from 4 Jul 2025 to rely on IChEMS bans; limited high-risk facilities may continue transition until 1 Dec 2027	50mg/kg for long chain PFAS and 10mg/kg where PFOS/PFHxS exists. There is nothing direct stating F3 foam must comply with a specific number
Queensland Foam Policy	Sets limits for non-persistent / fluorine-free foams, including cross-contamination in existing systems	PFSA sum C4-C12: 10 mg/kg; PFCA TOP-A C4-C14: 50 mg/kg as fluorine; simplified TOF-CIC: 6.4 mg/kg as fluorine.
Practical Market Definition	"PFAS-free" usually means no intentionally added PFAS plus analytical confirmation below specified thresholds	No clear national or international control metrics.

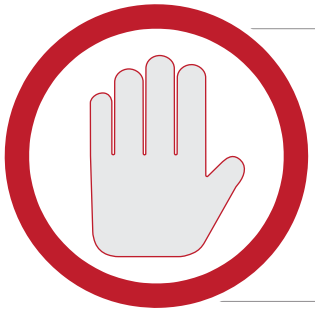
PFAS-Free Does Not Always Mean Fluorine-Free

PFAS are part of a broader family of fluorinated chemicals. A product labeled "PFAS-free" may only be free from selected regulated PFAS compounds, while still containing fluorinated residues, impurities or untested organofluorine chemistry.

That is why STA believes the future standard must go beyond PFAS-free claims

Zero PFAS means no detectable fluorinated surfactant chemistry

F - Zero contains ZERO Fluorines, therefore ZERO PFAS



No Fluorine exposure is safe
FREE should mean ZERO