FAQ: WHAT TO KNOW BEFORE PURCHASING "PFAS-FREE" GEAR

WHAT ARE PFAS, AND WHY ARE THEY DANGEROUS?

PFAS (per- and polyfluoroalkyl substances) are a large group of chemicals not found in nature. Known for their strong carbon-fluorine bonds, they are highly resistant to breaking down in the environment or the human body, allowing them to build up over time – earning the name "forever chemicals."

PFAS have been widely used in industrial and consumer products, including fire fighter protective gear. Studies have linked PFAS to multiple adverse health outcomes, including cancer. As the body of scientific evidence grows, so do concerns about the risks PFAS pose to fire fighters and the public.

WHAT ARE FLAME RETARDANTS, AND WHY ARE THEY DANGEROUS?

Flame retardants are chemicals added to materials to slow the spread of fire. One class, halogenated flame retardants – which includes brominated compounds like DBDPE – has been used in some "PFAS-free" moisture barriers to meet NFPA performance tests.

Like PFAS, flame retardants are not found in nature, can accumulate in the body, and are linked to serious health risks, including cancer, hormone disruption, and developmental effects. Some, like BDE-209, have already been banned in other consumer products. Despite these risks, manufacturers are not required to disclose the use of all flame retardants in fire fighter PPE, making independent testing and full transparency essential.

WHAT IS DBDPE, AND WHY IS IT DANGEROUS?

DBDPE (Decabromodiphenyl ethane) is a brominated flame retardant used in some newer fire fighter gear marketed as "PFAS-free." It was introduced as a replacement for BDE-209, a known toxicant that has been phased out.

DBDPE has a molecular structure and toxicity profile similar to BDE-209. Although it appears on the NFPA's Restricted Substances List, it is still intentionally applied to some moisture barriers that are not compliant with NFPA 1970. Testing shows that DBDPE can migrate from the moisture barrier into the thermal liner over time, potentially increasing fire fighters' exposure during wear.

WHAT IS A "REGRETTABLE SUBSTITUTION?"

A regrettable substitution occurs when one harmful chemical (like PFAS) is replaced with another that is equally dangerous (like halogenated flame retardants). These substitutions don't reduce risk – they simply trade one toxic exposure for another.

HASN'T FIRE FIGHTER PPE ALWAYS BEEN MANUFACTURED WITH HALOGENATED FLAME RETARDANTS?

No. Not all manufacturers have used halogenated flame retardants in fire fighter PPE.

PPE can become contaminated with flame retardants through repeated exposure on the fireground and can accumulate in all three layers over time. Concentrations from intentional use during manufacturing, however, are many times higher than those from contamination on the fireground.

Recently, some gear has been intentionally treated with flame retardants like DBDPE to meet NFPA performance tests. These treatments are not always disclosed, and newer flame retardants may pose health risks similar to those already phased out.

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WHEN DOES THE RESTRICTED SUBSTANCES LIST TAKE EFFECT?

NFPA Standard 1970 – which creates a Restricted Substances List limiting PFAS and other hazardous chemicals in PPE – does not take effect until Sept. 18, 2025, and manufacturers may continue selling existing gear until March 18, 2026. This delay leaves a critical gap where fire fighters could unknowingly purchase gear containing PFAS or other hazardous substances, like DBDPE.

CAN WE TRUST CLAIMS THAT GEAR IS PFAS-FREE OR NON-TOXIC?

No. Manufacturer claims should never be accepted at face value. When purchasing gear, the IAFF recommends requiring proof of compliance with NFPA 1970 – including its Restricted Substances List – along with certification from an independent restricted substance attestation organization. When in receipt of newly purchased gear, affiliates should work with their department to conduct their own independent confirmatory testing. Departments should request a copy of an OEKO-TEX Standard 100 Supplement PPE and Materials for PPE certification report (or equivalent).

IS PFAS-FREE GEAR HAZARD-FREE?

No. While some gear marketed as "PFAS-free" may eliminate fluorinated chemicals, it can still contain other hazardous substances – including intentionally added brominated flame retardants (BFRs).

In one study, turnout gear with a "PFAS-free" moisture barrier contained BFRs at concentrations 19 times higher than PFAS found in legacy moisture barriers it was meant to replace. Without full chemical disclosure, it's impossible to confirm whether new gear is truly safer.

WHAT QUESTIONS DO I ASK WHEN EVALUATING GEAR?

Start by contacting the manufacturer or vendor before making any purchase decision. Ask specific, written questions and request documentation.

Some key questions:

- Does the gear comply with NFPA 1970?
- Does the gear contain any PFAS?
- Does the gear contain flame retardants of any type?
- Does the gear contain any other chemical treatments, and if so, what are they?
- Have the materials or chemical treatments been tested for human toxicity?
- If so, were the results published in a peer-reviewed journal?
- Can you provide the full results of those tests?

WHAT IS THE IAFF DOING ABOUT THIS ISSUE?

The IAFF is conducting its own research with trusted scientists to evaluate gear independently. We're also working to hold manufacturers accountable, advocate for full transparency, and ensure our members can make informed decisions.