

Kappler Addresses PFAS and PPE: A Growing Concern For Firefighter Protection.



There is growing concern about the issue of PFAS and related chemicals potentially affecting firefighters and hazmat responders. From lawsuits to legal and regulatory efforts, serious steps are being taken to address workplace PFAS exposure for emergency responders.

As a leading innovator and manufacturer of protective clothing for chemical, biohazard and other hazards, Kappler is especially focused on solutions for PFAS exposure related to the use of turnout gear. As critical PPE for structure fire response, turnout gear can become contaminated with PFAS. This puts wearers at risk of long-term, repetitive exposure to these potentially carcinogenic compounds.

An interesting aspect of the PFAS conversation is the fact, according to a 2022 NFPA study, only 4% of response calls on average are for structure fires. The reality is that turnout gear is often worn for accident response, minor chemical spill incidents, and other situations encountered in the non-fire 96% of firefighter calls.



Certain PPE like the chemical suits shown can be part of an overall PFAS strategy.

In many of those scenarios a different type of protective garment would provide a dual benefit: A more appropriate protection for a given hazard, while also reducing the use and effectively extending the life of costly turnout gear. Significantly, such a PPE strategy also reduces the potential PFAS exposure to wearers from contaminated turnout suits.

This dynamic reflects the critical balance between PPE designed for primarily thermal protection (turnout gear) vs. garments to protect against hazardous materials (chemical suits). Each type of protection is necessary for the wide range of response scenarios handled by a typical response team. But having the ideal combination of PPE apparel

for every situation is often beyond the limits of many fire department budgets. Turnout gear is an absolute requirement for true firefighting needs, and can cost \$4,000 to \$5,000 per suit. Even with the increased concern over turnout gear-related PFAS exposure, many fire organizations struggle to afford turnout gear alternatives. Kappler is addressing this imbalance with a variety of protective fabrics and garments that can help mitigate the PFAS risk of fire and hazmat responders. The bulk of Kappler's chemical and biohazard protective suits are PFAS-free, while a few suits include PFAS only as a component of the face visors in gas-tight total-encapsulating suits. Other suits may contain some PFAS but offer benefits such as combining breathable fabrics with chemical and thermal protection — at much lower cost than traditional turnout gear. On balance some users may consider such benefits a valid trade-off to reduce the use of contaminated turnout gear when not responding to a structure fire.

As fire professionals seek to better understand the options for reducing PFAS exposure, Kappler is committed to providing effective alternatives when turnout gear is not the ideal response apparel. User education is paramount for Kappler, and that's why all Kappler protective garments are documented with clear, transparent statements addressing whether PFAS are found in a given suit.

See following page for additional PFAS technical information.

PFAS DEFINED

PFAS are a group of over 15,000 chemicals, per- and polyfluoroalkyl substances. PFAS are found in a variety of materials from carpets to cosmetics. Because of their widespread use and their persistency, PFAS can be found in the blood of people and animals all over the world and can be present at low levels in some food products as well as the environment. However, with increased regulation, research has shown a sharp decline in certain PFAS levels over the past 20 years.

HOW PFAS ENTER THE BODY

People are most likely exposed to these chemicals by consuming PFAS-contaminated water or food, using products meant to absorb in their skin made with PFAS, or breathing air containing PFAS. As dermal exposure has a low absorption rate, most exposure is from either ingestion or inhalation. At the time of this publication, the ACGIH has determined Threshold Limit Values for only 3 of the 15,000 chemicals in this family, and this data is for inhalation only.

PFAS IN PPE

PFAS also are commonly used in firefighting turnout gear because of their ability to dissipate heat and their water resistance properties. Ongoing research is being completed by the CDC as well as other agencies to evaluate the long-term health effects of these chemicals versus the abundance of other potential toxins that are encountered on a regular basis by these responders.

KAPPLER® PRODUCTS

Here at Kappler we are committed to bringing the best products to our customers. Although PFAS are present in the outer layer of our gas tight visor system as well as our Durachem® 200, neither material contains PFOA or PFOS. This specificity is important, as these are the two PFAS compounds of greatest concern. A significant note is that these products do not have sustained contact with the wearer's skin. Additionally, all Provent® and Zytron® fabrics, as well as Durachem 500 products, do not contain PFAS.

While studies are still limited, research and development are ongoing for PFAS compounds and their future uses. With this in mind, every effort must still be made to compare risk versus reward. Kappler will continue to monitor research on PFAS chemistry and update this document as more information becomes available.

Temporal Trends: Long Alkyl Chain PFAS

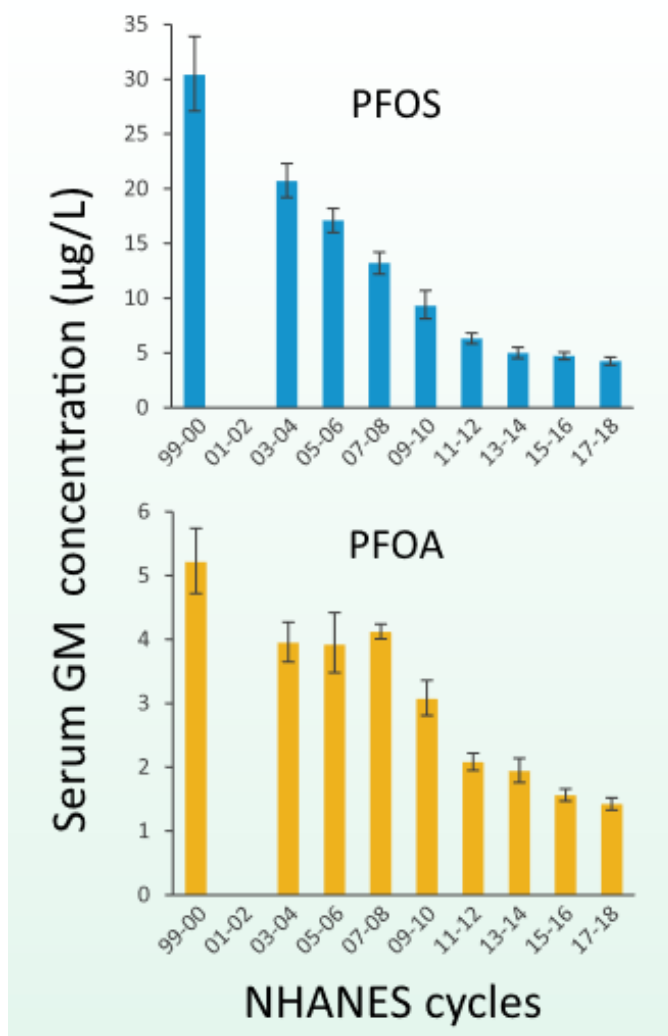


Figure 1: Trend of human blood serum geometric mean PFAS levels for various years. Graphic courtesy of NHANES.

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