

PFAS, PFOA, PFOS, PTFE and your Turnout Gear

Presented to:

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What is a PFAS?

- PerFluorinated AlkySubstances
- PolyFluorinated AlkySubstances
- Describes over 5,000 synthetic organic compounds.
- PFOA, PFOS and PTFE are PFAS

What is a PFOA?

- PerFluoroOctonic Acid
- One specific type of PFAS
- Chemical Industry used PFOA as:
 - a processing aid to make teflon polymer.
 - **Removed by 2015**
 - Class B Foams (AFFF) – Dec 2020 Congress ordered Military to phase PFAS out of AFFF by 2024.
- Uses in Turnout Gear:
 - Was a component in DWR (Durable Water Repellant).
 - PFOA transition began in 2010 completely removed by 2015.

What is a PFOS?

- PerFluoroOctaneSulfonate
- One specific type of PFAS
- Chemical Industry used PFOS as:
 - key ingredient in 3M ScotchGard. 3M replaced PFOS (C8) with PFBS (C4) around 2003.
 - Class B Foams (AFFF) – Dec 2020 Congress ordered Military to phase PFAS out of AFFF by 2024.
- Uses in Turnout Gear:
 - Not familiar with any use.

What is PTFE?

- PolyTetraFluoroEthylene
- Another specific type of PFAS
- Industry Uses for PTFE:
 - Probably the most common PFAS that most people can recognize
 - Uses are numerous in industry and consumer products.
 - Probably the most safe PFAS due to stability and inertness.
- Uses in Turnout Gear:
 - PTFE membrane is one layer in NFPA 1971 moisture barriers.
 - **Currently used.**

Turnout Gear performance due to PFAS in Moisture Barriers

- PTFE coated with polyurethane and laminated to textile.
- PTFE is currently required to meet several key performance measures required by NFPA 1971, 2018 Edition.
- PTFE is a solid material that is chemically inert.
- Similar PTFE materials are being used as life saving, implantable medical devices.
- PTFE has been in use for over 40-years with no known adverse effects.

Turnout Gear performance due to PFAS in Textiles

- Durable Water Repellency (DWR)
- Mainly found in Outer Shell and Moisture Barrier Textile Layers.
- Reduces wet pick-up and minimize garment weight.
- Provides durable Oil and Stain repellency to reduce trapped oils/combustible contaminants.
- PFOA was transitioned out of textiles starting 2010. Completely removed by 2015.
- Industry continues to work towards providing better performance while working with the best materials 'known' to be safe.

Not all PFAS Compounds are health hazards

- OVER 5,000 Compounds categorized as PFAS
- PFOS and PFOA have been found to be 'potentially harmful' and are regulated or even banned.
- Many are safe and stable compounds with unique, special properties.
- It is important to consider the trade-off of performance with perceived health risk if eliminating PFAS in gear.



Product containing PTFE/PFAS

- Food Containers
 - Pizza Boxes
 - Fast food wrappers
 - Popcorn bags
- Furniture – stain/water repellent
- Mattresses
- Carpets – stain/water repellent
- Non-stick Cookware
- Windshield washer fluid/wiper blades
- Wire and Cable wrap
- Bio-implantable coatings and devices.
- Dental Floss (Glide)
- High Pressure Valve packing
- Plumber's Tape
- Nail polish
- Clothing / Hair Curling irons
- High Temperature/Highly corrosive coatings.
- Reusable Filtration media for pharma, industrial . . . Etc
- Cell phone EMI gasketing and filters.
- disk drive anti-corrosion filters

Others Comments about PFAS in the Gear

- Diane Cotter – ‘resistance from industry to make change’ Environmental Working Group 6-25-2020
- Graham Peaslee – ‘discovering the obvious’ from Humpday Hangout 6-23-2020
- Rob Bilott – ‘information was not made available by industry’ from Humpday Hangout 6-23-2020
- Recent Peaslee study shows that turnout gear may ‘shed’ some PFAS.
- Studies/articles make assertions about risk. No evidence of exposure with cause and effect, yet.
- NC Study – ‘Dermal exposure highly unlikely’ Cody Zane: Hazard Assessment of Fluorochemicals Present on Firefighter Gear.

Some Final Comments

- Manufacturers supporting the turnout industry are comprised of a significant number of small, family-owned companies. These companies take personal pride in producing and supplying safe, state-of-the-art technology to firefighters.
- Advances and improvements are driven by firefighters and industry working together to solve problems. This is accomplished via NFPA. Industry is continually presenting firefighters with new and improved performance and safety measures.
- Companies must follow and do follow the safety and environmental regulations of many national, state and local organizations. Improvements and changes are made as society and industry learn more about the effect and impact of products.

Some Final Comments (continued)

- Organizations should properly put into perspective, the assumed risk with PFAS in turnout gear with other risks fire fighters face. It's about managing/minimize risk. You can not eliminate all risks for firefighters.
- How does the 'perceived' PFAS risk from turnout gear compare with firefighter's PFAS exposure from AFFF, carpeting, furniture and other environmental exposures from everyday life i.e. simple household dust?
- Currently, NFPA 1971, 2018 Edition performance can ONLY be achieved with PFAS materials.
- If firefighting gear and the NFPA 1971 performance is essential, then with the current materials available, PFAS is essential.
- Reactionary changes, based on emotional arguments can lead to devastating outcomes.

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