HB 3512, Oregon
House Committee on Climate, Energy and Environment

Vicki Quint, Co-Chair of the Foam Exposure Committee

Fire personnel have been completely unaware of the toxicity issues of Aqueous Film Forming Foam (AFFF) which has been used for decades. I became a firefighter advocate on PFAS problems after my fire chief husband died of multiple cancers related to his career and in particular one major incident exposure.

The Foam Exposure Committee was organized to test firefighting foam samples directly for total fluorine. The Committee issued 100 bulletins for the fire service posted at the Fire Department Safety Officers Association (FDSOA) website under "Safety Resources." [https://fdsoa.org/foam-exposure-information/] FDSOA has 12,000+ fire safety officer members.

When you experience continuous exposure to PFAS this is a problem as the chemicals will continue to build up in your blood, organs and tissues. The chemical compounds bind to proteins in your blood so they can affect every system in the body, especially blood rich organs such as your brain, heart and liver.

Some other facts:

- Firefighters have higher levels of PFAS in their blood than the general population. According to the International Association of Fire Fighters (IAFF), 72% of firefighters will get cancer.
- Blood has been tested for PFAS since the 1960s.
- Sensitive analytical methods have been available for testing perfluorochemicals in human blood since at least 2008 including biomarkers.
- 9/11 first responders have been involved in many medical studies of PFCs (PFAS).
- PFAS in drinking water can create PFAS blood levels in humans at 106 times the amount found in the drinking water resources.
- PFAS is transferred generationally as it is found in umbilical cord blood.

Fire departments are charged with protecting communities. Transition from AFFF allows the fire service to protect themselves and their communities from further PFAS contamination. The change is occurring nationwide driven through intense citizen pressure, legal actions and risk management decisions.

In September 2019, I was asked to give testimony at a Wisconsin state level Senate PFAS Committee hearing. Research on my late husband, Chief Michael Quint, who had died of multiple cancers was relevant.

My personal testimony followed that of a major foam manufacturer and Fire Fighting Foam Coalition lobbyist representatives who reported on their viewpoints.

After I finished speaking, committee members asked questions. The last question came to me from the chairman. He asked me, “Where are the firefighters!?” I responded, “They do not know. They have not been told.” Firefighters have had no choice but to be exposed to PFAS chemicals in their workplace and in their personal lives.

The “DoD [Department of Defense] has known since the 1970s that the foam was toxic.”[1]

> “PFAS chemicals are not currently classified as “hazardous waste” under federal waste disposal laws. That means that historically DOD, not EPA, has been able to decide whether legacy AFFF should be treated as hazardous waste.”[2]
>
> “Nearly all Americans have had some exposure to PFAS (with 6.5 million Americans experiencing adverse effects).”[3]

Final toxicity assessments for GenX and give additional PFAS-PFBA, PFHxA, PFHxS, PFNA, and PFDA are expected to be on-going. The final toxicity assessment for GenX (C6) and PFBS are expected in spring 2022.[4]

> ““PFAS pollution is a public health emergency and communities across the country are suffering devastating economic and health effects. While it’s good to see EPA laying out the steps that Administrator Regan announced today, it’s going to take even more action - from states, Congress, EPA, and other federal agencies - to turn off the tap on the pollution that results from using these dangerous toxic chemicals,” said Liz Hitchcock, Director at Safer Chemicals Health Families.”[5]

Progress is being made in replacing Aqueous Film-Forming Foams with fluorine free foams at the state level in the US. States are conducting voluntary takeback programs.

1 The Pentagon’s toxic ‘forever chemicals’ waste could be burning your home, Colin O’Neil, EWG, November 16, 2021, https://www.ewg.org/news-insights/news/2021/11/pentagons-toxic-forever-chemicals-waste-could-be-burning-near-your-home
2 ibid.
3 Cities/Counties with PFOA/PFOS Contamination in Tape Water, Alyssa Scavetta, Accessed 11/12/2021, https://www.aquasana.com/info/cities-with-pfoa-pfas-contamination-pd.html
4 PFAS Strategic Roadmap: EPA’s Commitments to Action 2021 – 2024, Accessed Nov 17, 2021, https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024

Negatives of AFFF Usage

> “The delay in taking action appears to have been caused by the combination of a dysfunctional regulatory system, a dispirited federal agency, and the ability of manufacturers to delay restrictions on the use of hazardous products.”[1]

Table 1

Negatives of AFFF	Positive of AFFF
Antiquated technology, first patent in the early 1960's[2]	
"Over-engineered" for airport facilities as AFFF was designed for shipboard applications[3]	
Has not kept pace with changing of aviation fuels	
Has not kept pace with biofuels, i.e., E10, E15	
Has not kept pace with aircraft composite materials	AFFF works well on pooled fuel fires. "Best on static fires that are contained in some manner."[12]
Persistent, Bioaccumulative, Toxic[4]	
Fish kill[5] [6]	
Animal contamination[6]	
Human contamination[6]	
C6 should be treated as C8[7]	
"Important to keep full tanks. Foam concentrate sloshing around will turn concentrate into a froth. The greater the air space the worse it gets."[8]	
"AR-AFFF concentrate may take weeks to calm down, if at all. This condition can cause VERY lean proportioning."[9]	
AFFF blankets do not last as long as an F3 foam. Fluorine-free foams have a longer blanket time length and thus would need to be re-applied less frequently.[10]	
AFFF is corrosive[11]	
AFFF gels	
Does not work well on 3D fires; "is not effective on hydrocarbon fuels in motion (i.e., three dimensional fires)…"[12]	
"Not good on running fuel fires"[12]	

1 ACS Publications, Environmental Science & Technology, Fool Me Once, David Sedlak, Editor-in-Chief, July 7, 2016, https://pubs.acs.org/doi/pdf/10.1021/acs.est.6b03367
2 Orion, Fluorinated Fire Fighting Foams History, accessed Oct 25, 2021, https://www.orion-fire.com/technical/afff-history/
3 EWG, News & Insights, It's Time To Switch to PFAS-Free Firefighting Foams, April 22, 2020, https://www.ewg.org/news-insights/news/its-time-switch-pfas-free-firefighting-foams
4 Jensen Hughes, A Historical Review of Fluorinated Foam Firefighting Agents, Performance Requirements/Environmental Safeguards Review, CMDR (ret) John P. Farley, Naval Research Laboratory and Joseph L. Scheffey, P.E., Fire Protection Engineer, Jensen Hughes, 21st American Chemical Society National Meeting and Exposition, March 2016, San Diego, CA, https://www.kappetijn.eu/wp-content/uploads/2019/05/Presentatie-HUGHES-Review-of-AFFF-Requirements-2016-1.pdf
5 Environmental Aspects of AFFF and AR-AFFF, Written on Behalf of Ansul Incorporated by Dick Ottman, White Paper 1017, https://www.ansul.com/en/us/DocMedia/F-2003115.pdf
6 Environmental Issues Associated With Defence Use of Aqueous Film Forming Foam (AFFF), Sonia Colville and Nicole McCarron, May 2003, https://www.kappetijn.eu/wp-content/uploads/2019/05/Environmental-issues-AFFF-defence-mei-2003.pdf
7 Petrochemical Industry White Paper, Firefighting Foam Transition Guidance, October 2020, does not wish to be directly cited
8 "AFFF Fluorine Facts, Jim Cottrell, New England Fire Mechanics & Service Tech. Assn. Annual Luncheon Presentation 2013, http://www.combatsupportproducts.com/ewExternalFiles/AFFF%20Fluorine%20Facts%20Handout.pdf
9 ibid.
10 Industrial Fire World, Sweet Smell of Success, Anton Riecher, Winter 2014, https://www.solbergfoam.com/getattachment/8bf831ab-f717-4b82-bbd0-2e2cb14c34ff/Sweet-Smell-of-Success.aspx

11 Answers, Is Firefighting Foam Corrosive? Accessed March 10, 2022, https://www.answers.com/Q/Is_fire_extinguishing_foam_corrosive

12 US Department of Transportation, Commodity Preparedness and Incident Management Reference Sheet, Petroleum Crude Oil, 09/2014, https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Petroleum_Crude_Oil_Reference_Sheet.pdf

This chart lists some incidents that have occurred in the US using fluorinated firefighting foams. Water contamination issues caused by AFFF usage proves why it is so important to transition to fluorine-free foams as soon as possible.

Table 2

Location	**Incident**	**Date**	**Gallons of foam used**	**Further Notes**
Barnstable, MA	Barnstable County Fire Rescue and Training Academy and the Cape Code Gateway Airport	On-going	Unknown	"The contamination of local water supplies can be traced to the Barnstable County Fire Rescue and Training Academy and the Cape Cod Gateway Airport. The two locations used PFAS-filled firefighting foam for decades…"[1]
Houston, TX	ITC petrochemical storage tank fires	17 March 2019	130,000+[2]	20M+ gallons of waste generated.[3]
Madison, WI	ATC Transformer fires	19 July 2019	59[4]	PFAS contamination from AFFF went into the Yahara River which then goes into the Rock River. FireAde and Phos-Chek were used.[5] Foams were mixed with 120,000 gallons of water.[6]
Macedonia, IL	Sugar Camp Coal Mine fire	14 June 2021	46,000[7]	"Inspectors later determined the company had pumped more than 46,000 gallons of PFAS-laden foam into the mine, raising the possibility that nearby private wells and other sources of drinking water could be contaminated."[8]
Miami, FL	Miami Dade College Fire Academy	On-going until 2019	Unknown [est. 20 gallons per semester][9]	"Of Miami-Dade's 95 water wells, 70 showed some levels of PFAS."[10]
Rockton, IL	Chemtool / Lubrizol chemical fire	19 June 2021	3,200	US Fire Pump[11] Signature Series C6 AR-AFFF 1X3%, Vapor suppression and fluorine-free foams used after AFFF was stopped.

The fire service will be dealing with contaminated training facilities including closed sites and fire department properties if firefighting foam has been used in the vicinity. Presently, there are 30,344 fire departments in the US.[12]

With continued USEPA prolonged delays in regulating PFAS over many decades, the US now has 33 states which "have either enacted or proposed regulations regarding per- or polyfluoroalkyl substances ("PFAS") present in Class B Aqueous Film-Forming Foams ("AFFF") used for firefighting, or present in firefighters' clothing and equipment."[13]

Oregon should join them!

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2 Industrial Safety & Hygiene News, Fighting chemical fire sends PFAS into Houston area waterways, March 22, 2019, https://www.ishn.com/articles/110461-fighting-chemical-fire-sends-pfas-into-houston-area-waterways
3 Houston Chronicle, The ITC fire created 20 million gallons of waste. Getting rid of it is no easy task. Perla Trevizo, Staff Writer, July 22, 2019, https://www.houstonchronicle.com/news/houston-texas/houston/article/It-took-days-to-put-out-the-ITC-tank-fire-that-14109491.php
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