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Fire Gear Laboratory Test Results

Posted on February 18, 2018 by Mutual Aid // 0 Comments

In January 2018, Dr. Graham Peaslee (https://physics.nd.edu/people/faculty/graham-peaslee/), the Professor of Experimental Nuclear Physics at the University of Notre Dame, sent unused samples of fire gear to a laboratory for testing. The purpose of the laboratory test was to determine the presence and content of Perfluorooctanoic acid (PFOA). Last fall, 2017, Dr. Peaslee (https://physics.nd.edu/people/faculty/graham-peaslee/) had performed an initial test to determine the presence of PFAS chemicals where he found the fabrics to be heavily fluorinated. See PFAS test results here (https://station-pride.com/2017/09/07/fire-gear-pfoa-the-data-the-real-cancer-in-your-gear-follow-up/). This additional test, performed last month, is used to determine a fraction of the PFOA in the garment itself. The results came back rather concerning.

PFOA is a suspected cancer-causing chemical also known as a carcinogen. It's been recently identified as a component of firefighting foam and is the subject of many lawsuits involving military families, cancer, and polluted water tables at military installations all over the United States. The Department of Defense has banned foam containing PFOA in a memo you can read here. (http://www.secnav.navy.mil/eie/Documents/Aqueous-Film-Forming-Foam-(AFFF)-Control-Removal-and-Disposal-(1).pdf) Additionally an article here, (https://www.military.com/daily-news/2016/09/12/firefighting-foam-linked-water-contamination-injuries-fire.html) and here (https://www.military.com/daily-news/2017/12/22/health-study-planned-after-air-force-firefighting-foam-tainted-water.html) and here. (https://taskandpurpose.com/decades-air-force-ignored-warnings-firefighting-foam-highly-toxic/?utm_source=linkedin&utm_medium=social&utm_campaign=share&utm_content=tp-share) Military installations around the globe have been draining crash trucks and barreling up foam concentrate, treating it as a hazardous material. Once PFAS chemicals break down into PFOA, it never goes away…ever. It can't be filtered out of the water, and it will always exist ultimately ending up in our bodies through natural processes.

PFAS chemicals are used to impart heat, water, and stain resistance to the outer shell of our turnout gear. This is the same chemical family used in firefighting foam which has been causing cancer and banned by the Department of Defense. The question raised by Diane Cotter, a firefighter spouse from Massachusetts whose Fire Lieutenant husband survived cancer, (story here (https://station-pride.com/2017/03/28/the-real-cancer-in-your-gear/)) addresses the need for understanding how the PFOA in turnout gear is affecting firefighters? We all know what happens when things are heated; they expand, off-gas, breakdown, and degrade. During this process, are firefighters absorbing PFOA into their skin and is this yet another catalyst to the incredible cancer rates within the fire service?

Our aim here is to provide you with the same exact information that we have so you can make-up your own mind. There are many more questions and even further testing needed, however, at this point, we've reached the pinnacle of our capability.

The following are excerpts from Dr. Peaslee's email presenting us with the fire gear test results.

"they (the laboratory) took the four pieces of clothing (fire gear) you sent me and took a small piece of each and rinsed it three times in heated methanol, and analyzed the rinse for the presence of 78 different PFAS. We know from previous textile work that this only will get some small fraction of what is adhered to the fabrics, but it will identify what is there. The results look something like this:"

	Concentration (ng/g)							
Item	PFBA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFTeDA	FHUEA
Right Sleeve	**<LOQ**	**14**	**<LOQ**	<LOD	**121**	**66**	<LOD	<LOD
Left Under Arm	**<LOQ**	<LOD	**13**	**116**	**74**	**57**	<LOD	<LOD
Moisture barrier	**<LOQ**	<LOD	<LOD	**41**	<LOD	**25**	<LOD	<LOD
Tail	**<LOQ**	<LOD	**14**	<LOD	**84**	**28**	**30**	<LOD
Envelope	**46**	**109**	<LOD	<LOD	<LOD	<LOD	<LOD	**40**

PFOA Test Results provided by Dr. Graham Peaslee, University of Notre Dame

…Dr. Peaslee continues:

"A quick explanation…these are the 7 different PFAS that showed up above the level of detection (LOD), or above level of quantification (LOQ). The PFBA are C4 acids, the PFHxA are C6 acids, the PFHpA are C7 acids, the PFOA is *C8 acids, the PFNA are C9 acids, and the PFDA* is *C10 acids, and the last one is a C11 acid.*

The first four rows are your four fabric samples with concentrations in ppb, and the last sample is the brown envelope in which the samples were shipped, so it is possible it contained some short-chained PFAS that might have contaminated the right sleeve sample. If you want to send these to a commercial lab at some point, you will want to put them in individual Ziploc *bags.*

In summary, there are C8, C9 and C10 PFAS found on each garment, but less on the moisture barrier. These are "long-chain" PFAS, and the majority seems to be heavier than PFOA, although there is certainly PFOA present. Combined with the PIGE *results which showed high levels of F present, and a methanol rinse that only removes a small fraction for analysis I would guess there is plenty of these long-chain PFAS applied to these garment samples.*

The lab also did a GC/MS test for volatile PFAS, and found only volatile PFAS on the Tail sample, but with fairly high concentrations: 6:2 FTOH (120 ng/g), 8:2 FTOH (3600 ng/g), and 10:2 FTOH (1300 ng/g) (with all other analytes below detection.)

The fact that both the GC and LC/MS data are indicating C8 and C10 in the samples helps confirm the long-chain observation. To my knowledge, this type of long-chain PFAS chemistry is not typically used in textiles these days…so it is unusual to see them in samples."

The European Union has set a safe limit of PFOA at 25 parts per billion(ppb). (See here) (https://echa.europa.eu/documents/10162/7a04b630-e00a-a9c5-bc85-0de793f6643c) The measurements found in two of the samples tested by Dr. Peaslee indicated a number nearly 5 times the limit set by the EU. Again, it's important to repeat Dr. Peaslee's words *"a methanol rinse that only removes a small fraction for analysis I would guess there is plenty of these long-chain PFAS applied to these garment samples."* Meaning the test results that have been provided are only a small fraction of what exists in the gear.

On February 1st, 2018, the IAFF Cancer Summit (http://client.prod.iaff.org/#page=Cancer_Summit_2018) took place in Lake Buena Vista Florida. This summit was sponsored by the companies who make firefighting turnout gear. We're curious if the chemicals used to treat fire gear was a subject that was addressed? We're very certain valuable information sharing occurred and the Cancer Summit was successful. Armed with the knowledge that firefighting foam has poisoned water tables and caused cancer, wouldn't it be prudent to address the reality of those same chemicals being used to manufacture our turnout gear?

Dupont was a sponsor of the IAFF cancer summit which took place just a few weeks ago. It is also the chemical manufacturer on the hook for producing these PFAS and PFOA chemicals used in firefighting foam and our turnout gear. A lawsuit was filed in September of 2017 against the CDC/ATSD AND EPA regarding PFOA by Attorney Robert Billott on behalf of a firefighter. See Lawsuit filing here (https://www.documentcloud.org/documents/3988104-Firefighter-Letter.html). An article regarding a previous lawsuit here (http://www.theintell.com/8dff6946-f1fc-11e6-91df-db15dd726e10.html) and here (http://www.newsandsentinel.com/news/local-news/2017/09/agency-asked-to-commence-national-study-health-impact-of-pfas/). The lawsuit essentially pushes the federal government to address the dangers of PFOA.

Firefighter cancer is definitely a grave and growing concern. We know the causes are many. A focused approach in one area will not resolve the issue. We don't want to suggest fire gear is a leading cause of firefighter cancer, but it's something that needs to be investigated. Fire Service Cancer is a multi-faceted problem which includes modern home furnishings, construction materials, furniture, vehicles components, diesel exhaust, asbestos, PFOA, and more.

We need to understand the chemicals that are used to manufacture our gear. As we understand it, GenX is replacing C8 PFOA, but what is GenX? We're virtually surrounded by cancer-causing elements on the job. We want to be careful not to suggest that Dupont doesn't care about firefighter cancer, but they make an awfully strange bedfellow considering what we know, the current lawsuits, the EU's ppb limit, and cancer in military families from firefighting foam. The DOD ignored warnings on firefighting foam for decades, let's not make the same mistake with our fire gear.

YOU CAN HELP!

We encourage you to **sign this petition (https://www.change.org/p/patrick-breysse-cdc-atsdr-appropriate-7-000-000-for-us-firefighters-for-pfas-study-re-pfoa-ppe-idlh)** on change.org urging Congress to fund the study necessary to resolve this issue once and for all.

-Diane Cotter

Facebook page: Your turnout gear and PFOA (https://www.facebook.com/Your-Turnout-Gear-and-PFOA-1808869939437081/)

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