Testimony to the House Committee on Human Services on April 14, 2021
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Thank you for inviting me to provide testimony regarding Senate Bill 20. My name is Marguerite Adelman, and I am a member of the Vermont Military Poisons Coalition which was started by the Women's International League for Peace and Freedom (WILPF) Burlington VT Branch. I am one of 26 members of our coalition. We represent an intersection of VT peace, environmental, and social justice groups and environmental advocates. Our focus is specifically on the military, and its role in PFAS contamination. When PFAS, or forever chemicals, are discussed, the huge military component of this poisoning of our ecosystems is rarely mentioned. We must deal with ALL PFAS contamination because it is ending up in our drinking water supply, our food, and in our bodies.

The toxic fluorinated chemicals known as PFAS are now confirmed or suspected at 678 military installations, according to the Environmental Work Group's (EWG) updated analysis of Department of Defense records. Pentagon officials have understood the risks of Aqueous Film Forming Foam (AFFF) since the early 1970s, when Navy and Air Force studies first showed it was toxic to fish. In the 1980s, the Air Force conducted its own animal studies on AFFF, and in the early 2000s, the maker of the fluorinated chemical PFOS, the main ingredient in AFFF, exited the market. In 2001, a Department of Defense memo concluded that the main ingredient in AFFF was "persistent, bioaccumulating and toxic."

But the Department of Defense waited until 2011 to warn service members and the public about the risks posed by PFAS. What's more, the department has been slow to switch to PFAS-free alternatives to AFFF and has been slow to clean up past PFAS pollution at current and decommissioned bases and other sites.

The National Defense Authorization Act (NDAA) for FY 2020 included important bipartisan reforms, including a provision to phase out AFFF by October 1, 2024. In the meantime, the NDAA forbids training exercises with the use of any AFFF releases. However, the provisions of the NDAA only apply to military facilities on property owned by the federal government, and do not apply to any civilian facilities. Vermont needs to pass its own laws related to AFFF use at civilian facilities.

I am not a scientist. I suggested a number of experts in various fields to speak with you today, but I was the one you asked to testify. While I am happy to do so, I believe that you would do better to consult with the major educational and non-partisan groups in this field: The Environmental Working Group (EWG), Harvard T.H. Chan School of Public Health, and the PFAS Project Lab of Northeastern University Social Science Health Research Institute. While I hope that you will not ask me scientific questions, I am happy to get answers to any and all questions that you may have. Today, I am speaking as a Vermont citizen and a resident of Winooski. I live downriver from the Vermont Air National Guard base and the Burlington International Airport. I watch many people fish in the Salmon Hole near me and I worry that the fish, which is not tested for PFAS, is heavily contaminated and should not be eaten.

The specific language that our coalition proposed around firefighting foam and other related equipment containing any form of PFAS is as follows:
"Not later than six months after the date of enactment, the Secretaries of the Agency of Natural Resources and Transportation shall require the use of fluorine-free firefighting foams by any party within Vermont, and not later than 1 year after the date of enactment, the Secretary of the Agency Natural Resources shall ban, after notice, the use of all PFAS-based firefighting foams within the state of Vermont by all private, local, state, and or federal entities to include the Department of Defense and Department of Homeland Security and their agents."

I have found the subject of PFAS very confusing and believe that it is easy to be misled or confused by others when they present information. This was true when I listened to the many industry proponents speaking in Senate testimony. First, it's important to realize that there are over 5,000 different man-made PFAS chemicals—in other words a whole class of chemicals of which Vermont has only regulated five. Two of those five are the most common and most studied: PFOS and PFOA.

Starting in 1970, PFAS was used in the formulation of eight carbon-based (C8) Aqueous Film Forming Foam (AFFF), which was used by the United States Air Force (USAF) and the Air National Guard (ANG) to extinguish petroleum fires. The C8 AFFF is known as long-chain PFAS and contains both PFOA and PFOS, which are recognized as persistent, bio-accumulative, and toxic (ITRC, 2018b). The last known discharge of long chain, C8 AFFF at the Burlington Air National

Guard Base was in July 2015. However, the soil and groundwater continue to be contaminated at 72,000 parts per trillion. The Vermont drinking water standard is 20 ppt of just 5 PFAS chemicals.

C8 AFFF at the Burlington Air National Guard Base has been replaced with short-chain, six-carbon (C6) AFFF, approved under the U.S. EPA's Stewardship Program. According to the military, C6 PFAS are currently considered lower in toxicity and appear to have significantly reduced bio-accumulation potential compared to C8 PFAS.
(https://anrweb.vt.gov/PubDocs/DEC/Hazsites/770043.ESI.PFAS.Report.pdf **--** SEPTEMBER 2020 FINAL EXPANDED SITE INSPECTION REPORT FOR PER- AND POLY-FLUOROALKYL SUBSTANCES (PFAS) AT THE BURLINGTON AIR NATIONAL GUARD BASE SOUTH BURLINGTON)

Please make no mistake about this change from C8 to C6. C6 or short chain AFFF is still PFAS. Though marketed as environmentally responsible, this new C6 foam contains PFAS chemicals based on slightly shorter carbon chains — six, as opposed to eight, atoms. What makes PFAS is the fluorine-carbon bond -- regardless of the numbers of atoms of each –- it is still harmful. It's the bond that takes a long time to break down and that is generally bio-accumulative.

The Vermont Air National Guard has not stopped using PFAS, they are just not using PFOA and PFOS forms of PFAS. They have replaced older foam with a newer PFAS formulation that contains only slightly tweaked versions of the same problematic compounds. While many of these shorter compounds exit the human body more quickly, they still accumulate in blood and other tissues. And, like the longer compounds that have been the focus of environmental concerns across the country and around the world, these shorter molecules will persist indefinitely in the environment and never break down on their own.
(https://theintercept.com/2018/02/10/firefighting-foam-afff-pfos-pfoa-epa/)

FDA studies – published in the peer-reviewed scientific journals Toxicology and Applied Pharmacology and Food and Chemical Toxicology looked at these short chain PFAS compounds. The findings indicate that the human health risks of these short-chain PFAS have been significantly underestimated. The studies show, once again, that the more we learn about short-chain PFAS, the more concerns emerge. Environmental and public health advocates have been raising concerns for more than a decade about the inadequacy of industry studies of PFAS. (https://www.ewg.org/news-insights/news/fda-studies-short-chain-pfas-

chemicals-more-toxic-previously-thought)

As recommended in our language for changing S. 20, the Vermont Air National Guard is not using a fluorine-free foam; they are just using a new formulation of PFAS. This fire fighting foam from the base/airport is in our groundwater and is adding to all the other forms of PFAS coming from industrial sites, landfills, and sewage/wastewater treatment plants and overflows.

There are fluorine-free alternatives in fire-fighting. Europe is using them and in many countries all forms of PFAS fire fighting foam have been banned. PFAS-free foams are already being used successfully by airports, militaries, and oil and chemical companies across the globe. Fluorine-free foams are used by the Danish and Norwegian armed forces. All 27 major Australian airports have transitioned to fluorine-free foams, as have many major international airports, including London Heathrow and Gatwick, Paris-Charles De Gaulle and Dubai. Fluorine-free foams are used by oil and chemical manufacturers, including BP, ExxonMobil, Statoil, BASF, AkzoNobel, Pfizer and Lilly. We must do the same here in the U.S. and in Vermont. The bottom line is that the cost to clean up PFAS contamination is far greater than the cost to use safer alternatives.

Vermont needs to do more about PFAS and to do it now. Our state is a tourist destination and revenue is generated by the tourist industry. Evidenced by the increase in the number of licenses sold, fishing and hunting have been more popular than ever during this pandemic. As people learn about PFAS contaminated fish and wildlife will we remain a place that people want to visit and a place where people want to live?

I want to see Vermont a leader in PFAS legislation. We can and we must do more to protect ourselves and our children and grandchildren. And while our military needs to defend us from threats, it also needs to defend our health and our environment. We must hold them accountable and demand that they do so.

Other Resources:

- www.militarypoisons.org
- https://pfas-1.itrcweb.org/2-2-chemistry-terminology-and-acronyms/
- https://pubmed.ncbi.nlm.nih.gov/33140071/
- https://www.hsph.harvard.edu/news/hsph-in-the-news/pfas-exposure-linked-with-worse-covid-19-outcomes/
- https://pubmed.ncbi.nlm.nih.gov/