



Introduction

My name is Kyla Bennett, and I am the Science Policy Advisor for Public Employees for Environmental Responsibility (PEER). I have a PhD in Ecology and Evolutionary Biology, and a law degree with a certificate in environmental and natural resources law. Thank you for allowing me to testify on S. 197 again on February 21, 2024.

Definition of PFAS. Originally, S. 197 used the “one fully fluorinated carbon” definition used by most states. This definition is simple, and is the definition used by the majority of states. Some have suggested using the Organisation for Economic Co-operation and Development (OECD) PFAS definition, which is “fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it), i.e. with a few noted exceptions, any chemical with at least a perfluorinated methyl group ($-CF_3$) or a perfluorinated methylene group ($-CF_2-$).” While either definition is acceptable, the benefit of the former is that it is consistent with other states and the Department of Defense’s (DoD’s) definition in the National Defense Authorization Act (NDAA).

It is important to note that the Environmental Protection Agency (EPA) does not have a consistent PFAS definition across the Agency. There are roughly 14,000 PFAS recognized by EPA, but we only have toxicity information on about 130 of them. However, the absence of evidence does not mean the evidence of absence. In other words, just because we do not have toxicity information does not mean they are safe. Indeed, many scientists argue that we should regulate PFAS based on their persistence alone,¹ which means that we should regulate as many as possible as a class.

I understand that the new version of S.197 now contains a different definition of PFAS, deferring to the definition contained in 40 CFR Section 705.3. Specifically, that definition is:

Per- and polyfluoroalkyl substances or *PFAS* means, for the purpose of this part, any chemical substance or mixture containing a chemical substance that structurally contains at least one of the following three sub-structures:

- (1) $R-(CF_2)-CF(R')R''$, where both the CF_2 and CF moieties are saturated carbons.
- (2) $R-CF_2OCF_2-R'$, where R and R' can either be F , O , or saturated carbons.

¹ <https://pubs.rsc.org/en/content/articlehtml/2020/em/d0em00355g>

(3) $\text{CF}_3\text{C}(\text{CF}_3)\text{R}'\text{R}''$, where R' and R'' can either be F or saturated carbons.

This definition, used in one section of EPA, differs from the OECD definition as follows: the OECD definition requires a *single* fluorinated carbon, while the proposed definition requires at least *two* fluorinated carbons in all three subparts. Subparts (1) and (3) further constrain that the two fluorinated carbons are *directly attached* to each other, and subpart (2) allows for a single oxygen atom to bridge the two carbons.

The practical effect of this is that the new proposed definition will exclude some substances at the low molecular weight end of the spectrum, like trifluoroacetic acid (TFA), and carbon tetrafluoride. The reason this is of concern is that these low molecular weight chemicals that might be precursors or degradants of other, more toxic PFAS. Therefore, it is important to keep the original definition of “one fully fluorinated carbon”; alternatively, shifting to the OECD definition would be acceptable. PFAS chemistry is tricky, and it would be problematic to allow PFAS that industry tells you are safe, only to have them turn into highly regulated PFAS like PFOA or PFOS.

Therefore, I strongly urge you to keep the original definition of PFAS, which is used by the vast majority of states.

Intentionally added PFAS. Restricting this bill and other PFAS legislation to apply only to “intentionally added PFAS” provides huge loopholes to industry. The massive quantities of PFOA and other long-chain PFAS we are seeing leach into contents from fluorinated containers are not “intentionally added.” Moreover, much of the PFAS we see in things like artificial turf is not “intentionally added,” but rather used in the manufacturing of the product on the machinery.

California has developed good language that captures both the intentionally added PFAS and these other uses:

PFAS used or produced during a product’s manufacture or processing that is introduced into or onto the product, whether or not it confers a functional or technical effect in the product. This includes any source of PFAS that is reasonably known to be present, including the use of processing agents, mold release agents, or fluorination.

I would urge you to change your language on “intentionally added” PFAS to close these loopholes.

Drinking water limits. As you are aware, EPA will be finalizing their Maximum Contaminant Levels (MCLs) for six PFAS any day now. EPA made it very clear that they were using a 4 part per trillion (ppt) limit for PFOA and PFOS only because they claimed that this “is the lowest concentration that PFOA and PFOS can be reliably quantified within specific limits of precision and accuracy during routine laboratory operating conditions.”² However, EPA also set the Maximum Contaminant Level Goal (MCLG) for both of these PFAS at zero due to how toxic they are.

² <https://www.federalregister.gov/documents/2023/03/29/2023-05471/pfas-national-primary-drinking-water-regulation-rulemaking>

Commercial laboratories now routinely test down to 2 ppt in drinking water. Once EPA finalizes its rule, Vermont and other states must adopt the same or lower limits. Given the toxicity of PFAS, I urge Vermont to require a bill that the Agency for Natural Resources (ANR) and Department of Health (DoH) adopt drinking water standards of 2 ppt where feasible, with language that allows this to be updated to an even lower limit once labs are able to achieve lower detection limits.

Industry exceptions/claims of essential/unavoidable use. While waiting to testify, I had the opportunity to listen to some industry lawyers tell you that the economy would be adversely impacted by your bill. This is not true. For example, Catherine Palin from the Alliance for Automotive Innovation told you that there is “no exposure” of PFAS to consumers, that auto workers are protected due to their use of personal protective equipment (PPE), and that your bill would halt the sale of automobiles in the state. This is demonstrably false.

Most of PFAS use in automobiles is not essential, and much of it does indeed expose consumers. There is stain treatment on car upholstery; waterproofing treatment on windshields and consoles; and PFAS in plastic tanks and some tubing, etc. Much of this is unnecessary. Moreover, many car owners work on cars themselves, changing the oil, filling their own gas tanks, polishing and waxing their cars, etc. There is exposure, as PFAS can be ingested, inhaled, and dermally absorbed.

Moreover, when cars reach end of life, they are crushed, recycled, re-used, etc. Exposure to the PFAS is certain during these activities. As for PPE, I have never seen my mechanic wear a mask, let alone gloves, when working on my cars. It is unconscionable to simply assume that PPE will be provided, worn, and that this PPE will protect auto workers from the PFAS.

The essential use concept is an important one, but industry is mis-using it. Scientists are urging regulators to define essential use as “(1) the function (chemical, end use and service) that the chemical provides in the use case, (2) whether the function is necessary for health and safety and critical for the functioning of society *and* (3) if the function is necessary, whether there are viable alternatives for the chemical for this particular use” (emphasis added).³ PFAS use is ubiquitous, but the market is changing. You can now purchase PFAS-free rain gear, hiking boots, frying pans, menstrual underwear, firefighting foam, and dozens of other products. Indeed, researchers have found that some PFAS applications do not even work as advertised.⁴ Therefore, to take the industry’s word for a use being “essential” means that they will not even search for alternatives. Any exception to a potential ban should include the definition of essentiality as described above, and industry should demonstrate that they meet this definition *after* the bill becomes law. Carving out exceptions now means that your bill will not be protective of Vermonters.

EPA is not protecting us. As I stated before, EPA is slow walking PFAS regulation. Moreover, EPA is taking the whack-a-mole approach to PFAS laws, going after one individual PFAS at a

³ <https://pubs.rsc.org/en/content/articlehtml/2021/em/d1em00180a>

⁴ <https://phys.org/news/2023-04-pfas-dont-furniture.html#:~:text=For%20water%2Dbased%20coffee%20stains,finished%20and%20unfinished%20fabrics%20alike.>

time. This approach will doom generations of Americans to a legacy of PFAS contamination. While EPA did issue two extremely strong orders on fluorination of containers, those orders are at grave risk of being overturned by the 5th Circuit. It is crucial for states to fill the regulatory void left by EPA and protect their citizens.

If EPA does suddenly step up to the plate and start banning PFAS as a class, there is no harm done from your bill. But, if EPA takes years to regulate PFAS in products, or even ban/regulate certain PFAS, your bill has the potential to save Vermonters from PFAS contamination of soil, water, food, and air.

In conclusion, I urge you to keep Sections 6 and 7 in S. 197 to protect Vermont farmers and its citizens from devastating health and economic impacts. Moreover, I urge you to keep the “one fully fluorinated carbon” or the OECD definition of PFAS; require strict drinking water standards; revise the “intentionally added” language, and include an essential use concept in your bill as opposed to carving out exceptions. To do otherwise will adversely affect both the environment and the human health of the people in Vermont.

Thank you for allowing me to testify.

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