



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.

By way of background, I was the one who discovered PFAS in Anvil 10+10, a mosquito adulticide used in at least 26 states, which led to the discovery of fluorinated containers leaching per- and polyfluoroalkyl substances (PFAS) into their contents. I am also a co-author on a paper that has been submitted to a peer-reviewed scientific journal on PFAS in pesticides which should publish soon.

I am testifying today to urge you to keep Sections 6 and 7 in S.197, which is a critically important bill. I would like to share information regarding why PFAS in pesticides is such a huge problem for human health, farmers, and the environment.

Definition of PFAS. Currently, S. 197 uses the “one fully fluorinated carbon” definition used by most states. This definition is simple, but may capture some substances that are not as persistent or toxic as the worst PFAS. 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 (–CF₃) or a perfluorinated methylene group (–CF₂–).” 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. 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.

Health effects of PFAS

As you are aware, PFAS are a large class of persistent human-made chemicals that lead to a number of health effects, including cancer; developmental problems in infants and children;

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

fertility and pregnancy problems; endocrine disruption; increased cholesterol; immune system problems; and, interference with liver, thyroid, and pancreatic function. PFAS toxicity targets the immune system, which means it causes decreased antibody response to vaccines, and exacerbates autoimmune disorders like asthma and ulcerative colitis.

Some PFAS are toxic in incredibly tiny amounts; indeed, in March of 2023, EPA stated, “there is *no dose* below which either [PFOA or PFOS] is considered safe.” Accordingly, EPA set its proposed MCLG at zero for these compounds.

PFAS gets into pesticides in one of four ways:

- 1) The biggest contributor to PFAS in pesticide products is **active ingredients** and their degradates.

Of the 471 synthetic active pesticide ingredients that are currently registered in the U.S., 66 – or 14% - are PFAS.

Unfortunately, this practice of using PFAS as active ingredients has increased over the past ten years: of the 54 active ingredients that have been approved in the most recent 10 years, 16 - or 30% - are PFAS.

- 2) **Inert ingredients** (emulsifiers, solvents, propellants, etc.) can also be PFAS. Inerts are not required to be publicly disclosed on the pesticide label. PFAS can aid in surfactancy, and assist penetration of PFAS into living organisms. They can also increase shelf life and stability of pesticides. Until recently, EPA had roughly 20 PFAS listed as approved inert ingredients in pesticides. They removed 12 of these from the approved list after we pressured them, but eight PFAS still remain on their approved list of inerts.
- 3) **Adjuvants** – products that are added by applicators to reduce drift or enhance pesticidal effects, may also be fluorinated. The federal government does not regulate adjuvants as pesticides, and information about them is considered proprietary, so it is impossible for us to know which are fluorinated.
- 4) PFAS can also get into pesticides through **contamination**, and the most well-known source of contamination is through fluorinated containers. There are three types of fluorination, but the post mold fluorination process of HDPE containers creates massive quantities of PFAS, including three that are in your bill: PFOA, PFNA and PFDA. EPA found total concentrations in the 10 - 60 parts per *billion* range in these fluorinated containers, and this PFAS leaches into the contents of the containers. It is nonsensical to allow PFAS in pesticides – particularly on food crops or near water - given that EPA said there is “no safe level” of several of these chemicals.

It is estimated that 20 to 30 percent of all hard plastic containers used in the agricultural sector are fluorinated, elevating concerns about widespread PFAS contamination. There are also other sources of unintentional contamination – but very little is known about this.

The fluorinated container issue is not resolved. When we initially discovered PFAS in Anvil 10-10, EPA took an enforcement action against its manufacturer, Clarke Mosquito. EPA did not take enforcement actions against any other pesticide manufacturer and many pesticide manufacturers are still using these fluorinated containers. In December of 2023, EPA issued two orders under the Toxic Substances Control Act (TSCA) against Inhance Technologies,² the only company that engages in post-mold fluorination, and ordered them to cease all fluorination by February 28, 2024. However, Inhance appealed to the 5th Circuit, and oral arguments took place on February 5, 2024.³ While the court has not released an opinion yet, the questioning was openly hostile to EPA's Department of Justice (DOJ) attorneys, and it is highly likely these orders will be overturned. If that happens, PFAS will continue to leach into many pesticide products, and therefore it is important for Vermont to ban the practice of using pesticides in fluorinated containers.

EPA is not protecting us. We cannot rely on EPA's pesticide risk assessments to protect us. Indeed, a federal court just halted EPA's approval of dicamba,⁴ citing a "very serious" violation of FIFRA; the Office of Inspector General (OIG) issued a scathing report on EPA's improper downgrading of the fumigant Telone's cancer classification;⁵ and EPA's registration process for pesticides only looks at an active ingredient, and not the mixtures of chemicals.

There is no better way to contaminate our soils, waters, and food supplies than applying pesticides with PFAS. In 2021, roughly 1 billion pounds of pesticide active ingredients were applied on farmland throughout the country. This makes pesticides some of the most widely distributed environmental pollutants across the U.S.

Because PFAS are so persistent, each subsequent application adds more PFAS into our environment. This is evidenced by two pesticides, both with PFAS active ingredients (Fipronil and bifenthrin) first approved in 1996 and 1985, respectively. They are the most widely detected pesticides in U.S. streams, lakes and rivers and both are often found at levels that exceed aquatic safety thresholds. Also, in beeswax samples taken from commercial beehives in multiple U.S. states in 2007 and 2008, 98% contained the 1980s-era PFAS pesticide fluvalinate. PFAS are forever.

I would be remiss if I did not add that some of the anti-flea and tick products used on farm animals are dangerous to Vermont's waters. A new study is warning that products such as Fipronil and Imidacloprid are being found in waterways "at concentrations that ecotoxicological studies have shown can harm aquatic life."⁶ It is not necessary to have PFAS in these medications, and they are harming our environment. There are many alternatives to these PFAS pesticides.

² <https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/epa-orders-issued-inhance>

³ <https://www.courtlistener.com/audio/90487/inhance-technologies-v-epa/>

⁴ <https://www.commondreams.org/newswire/federal-court-halts-spraying-of-monsantos-dicamba-pesticide-across-millions-of-acres-of-cotton-soybeans>

⁵ https://www.epa.gov/system/files/documents/2022-07/_epaig_20220720-22-E-0053.pdf

⁶ <https://www.sciencedirect.com/science/article/pii/S0048969724003103>

We must protect farmland – and farmers – from these chemicals. We have cases all over the country – Maine, Michigan, Texas – where farmers are being forced to stop selling their meat, dairy, and vegetables, due to PFAS contamination. Farmers are losing their farms and their livelihoods. While many of these cases are from PFAS in biosolids, as PFAS become more tightly regulated, the potential exists for PFAS from pesticides to contaminate farms and farm products – not to mention drinking water – to the point where they can no longer be consumed. We are starting to see lawsuits from PFAS contaminated products. People will start suing farmers over PFAS in food; potential liability issues are looming.

One note about testing. It should be noted that the results of PFAS testing by different groups have produced conflicting results that appear to depend on the analytical methodology used, and where the testing was conducted. This confirms the difficulty of testing complex mixtures like pesticide products for PFAS. However, while I am not at liberty to say more at this time, please note that PEER is challenging EPA’s memo which disputes the findings of large quantities of PFAS in some pesticides, and we are going to be asking for a retraction. Multiple scientists have found PFAS in pesticides – they are present, and it is a huge problem. EPA knows they are there.

In conclusion, the long-term impacts of using mixtures of extremely persistent chemicals on farmland in Vermont every year are a cause for concern. Most, if not all, PFAS in pesticide products or their degradates are going to be legacy pollutants, and their ultimate impact on human and environmental health are largely unknown. As Rachel Carson famously said, “If we are living so intimately with chemicals—eating and drinking them, taking them into the very marrow of our bones—we had better know something about their power.”

We *do* know the power – and the danger - of PFAS. I urge you to keep Sections 6 and 7 in S. 197 to protect Vermont farmers and its citizens from these devastating health and economic impacts.

Thank you for allowing me to testify.

Kyla Bennett, PhD, JD
Director of Science Policy
Public Employees for Environmental Responsibility
kbennett@peer.org
508-230-9933

February 9, 2024