**Testimony of Kate Donovan,**
**Senior Attorney and Director, Northeast for Environmental Health at**
**the Natural Resources Defense Council (NRDC) before**
**House Human Services Committee**

Good morning and thank you for the opportunity to testify today. My name is Kate Donovan. I'm a Senior Attorney and Northeast Director for Environmental Health at the Natural Resources Defense Council (NRDC). NRDC is a nonprofit organization dedicated to protecting public health and the environment. Since its founding in 1970, NRDC has advocated for ambitious and pragmatic policies that address pressing environmental challenges. I am pleased to see Vermont considering the elimination of PFAS in cosmetics, menstrual products, textiles, and turf.

***What are PFAS chemicals and why we are concerned?***

PFAS, short for per and polyfluoroalkyl substances, are a class of thousands of man-made synthetic chemicals. PFAS have many characteristics that make them dangerous for our health and problematic once in the environment. Firstly, PFAS are highly mobile, meaning that they move quickly through the environment making their contamination hard to contain. Their purpose is to provide anti-stick and gliding functions, like inhibiting and repelling stains on textiles and fabrics, stopping food from sticking on pans, to allowing dental floss to glide smoothly between your teeth. Second, PFAS molecules are characterized as having a chain of linked carbon and fluorine atoms. Because the carbon-fluorine bond is one of the strongest in nature, these chemicals do not degrade easily in the environment. And often why you hear them referred to as "forever chemicals." Third, they can accumulate in our bodies and food and environment, and some PFAS can persist in our bodies for years. It's estimated that 98% people living in the US have PFAS in their blood.[1]

The scientific literature linking PFAS to a myriad of health effects is robust - ranging from cancers, hormone disruption and liver dysfunction to birth defects, infertility and immunosuppression (interfere with immune system and vaccination uptake).[2] The best studied PFAS, such as PFOA and PFOS, are extremely toxic, linked to numerous health problems and

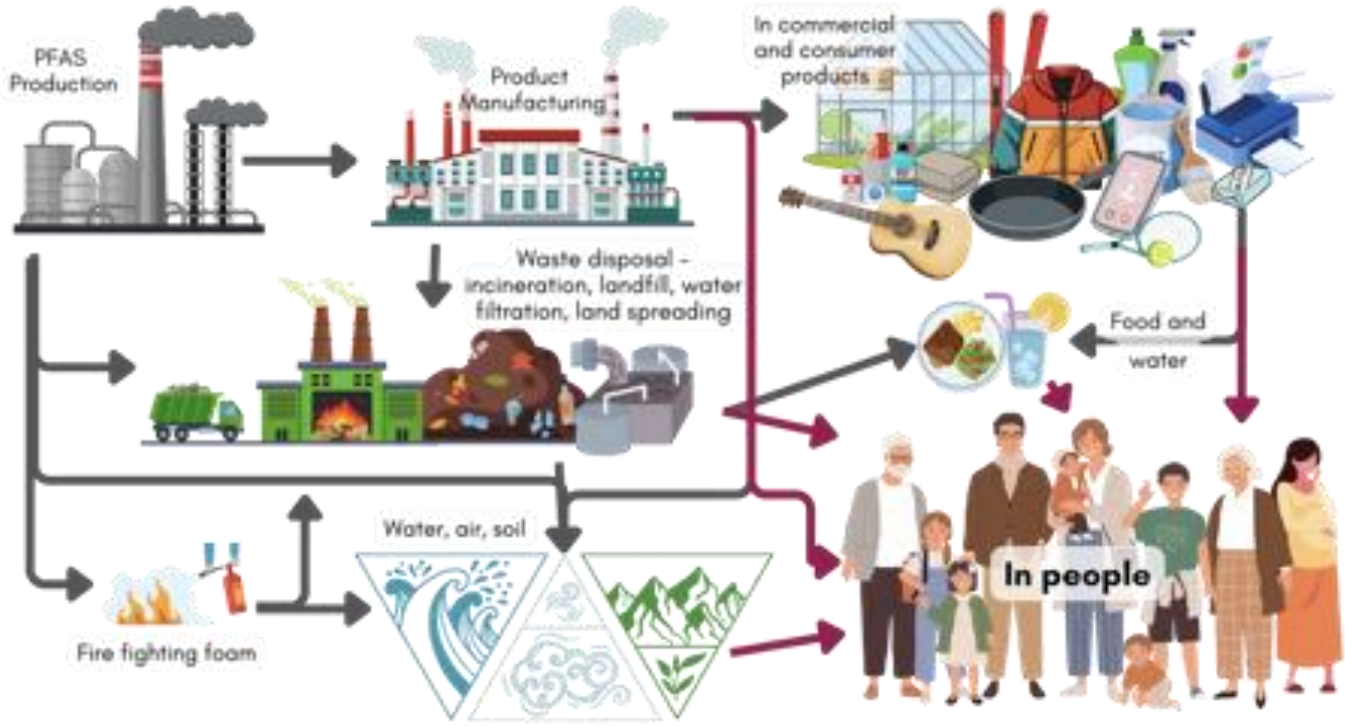
[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2072821/
[2] https://www.atsdr.cdc.gov/pfas/health-effects/index.html

cancers.[3] Even PFAS at extremely low levels of exposure can negatively impact our health.[4] I have attached an appendix to my testimony providing a lengthy list of health studies that have come out just in the last couple of months, such as prenatal exposure to some PFAS are associated with a higher risk of childhood leukemia,[5] and new research showing that two types of PFAS have spurred cancer cells to migrate to new positions in the body.[6]

***How are we exposed?***

PFAS are all around us and almost impossible to avoid. The U.S. Geological Survey has discovered at least 45% of the nation's tap water is contaminated with PFAS chemicals; approximately 50% of New York public water systems are contaminated with PFAS and this does not include the millions of people serviced by private wells. PFAS enters our environment through manufacturing, use, and disposal. Concerning, PFAS is also found in a myriad of common everyday products including cosmetics, menstrual products, textiles, turf, and many household items. This is why it is so critical to turn off the tap of non-essential uses of PFAS.[7]

**Image 1. Lifecycle of PFAS Pathways into Environment and Human Exposure**




[3] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7906952/

[4] https://apnews.com/article/science-climate-and-environment-government-politics-1997041096d6fc84edde97cf16f72bce

[5] https://academic.oup.com/jnci/advance-article/doi/10.1093/jnci/djad261/7471885

[6] https://www.insideprecisionmedicine.com/topics/oncology/pfas-compounds-known-as-forever-chemicals-accelerate-cancer-migration/

[7] See Optimizing Chemicals Management in the United States and Canada through the Essential-Use Approach, *Environ. Sci. Technol.* 2023, 57, 4, 1568−157, https://pubs.acs.org/doi/10.1021/acs.est.2c05932

**Image 2: Human Exposure Pathways**


***PFAS and toxic chemicals in cosmetics and personal care products***

Chemicals and PFAS found in cosmetics and personal care products, aside from drinking contaminated water, is one of the most direct exposure pathways. Our skin is our largest organ, and what we put on it can be absorbed into the bloodstream and potentially bioaccumulate in our body. According to the Environmental Working Group, "on average, women use 12 personal care products a day, exposing themselves to 168 chemical ingredients. Men use six, exposing themselves to 85 unique chemicals."[8] This is why small, prolonged exposures can lead to serious health impacts. These chemicals can be associated with asthma, allergies, hormone disruption, neurodevelopmental problems, infertility, and even cancer.

It is great to see Vermont following suit with legislation to ban some of the most toxic chemicals that are found in cosmetics and personal care products. The European Union in many ways is the gold standard, prohibiting the use of carcinogenic, mutagenic, or toxic substances in cosmetic products. However, other states such as California, Maryland, Colorado, and Washington have followed suit.

I'd like to point out a few things for your consideration to make the bill as strong as possible. The language used to exempt "technically unavoidable trace quantities from natural or synthetic ingredients; the manufacturing process; storage; or migration from packaging" significantly weakens the bill. Manufacturing processes and contaminant migration from packaging are real and concerning ways toxic chemicals, particularly PFAS, end up in the final

[8] https://www.ewg.org/news-insights/news/2004/12/exposures-add-survey-results

product. We believe we should be pushing all levels of the supply chain to do better, and producers have a responsibility to understand their supply chains. I'll note that California has removed the trace quantities language in relation to PFAS in personal care and cosmetics,[9] and New York's proposed legislation seeks to address non-functional byproducts and non-functional contaminants.[10]

***PFAS and toxic chemicals in menstrual products***

PFAS is also found in menstrual products, which come into contact with one of the most sensitive and absorbent parts of the body. PFAS has been determined to contribute to reproductive and fertility challenges, reduced immune function, hormone interference, and cancer. Banning these chemicals helps protect vulnerable populations, such as developing and adolescent females, as well as lower-income individuals who have unstable access to the menstrual products, let alone more expensive non-toxic brands and alternatives on the market. Again, I would caution against weakening the legislation and require the presence of no PFAS or toxic chemicals. In fact, New York is progressing a similar menstrual product bill that covers the presence of all restricted substances.[11] This bill has passed the Senate and will be brought to a vote in the Assembly soon.

***PFAS in textiles and apparel***

Another important consumer product where PFAS is found is in textiles, which are one of the largest known uses of the toxic forever chemical. PFAS can lead to contamination of water sources at each stage of the textile life cycle from production to disposal. Some studies have suggested that PFAS may be absorbed dermally from PFAS-treated clothing. PFAS in textiles may also contribute to PFAS in household dust and exposures via that route.[12]

California has enacted a law banning PFAS in most clothing and textiles, starting in 2025. New York followed suit on apparel with the same timeline; New York has bill on textiles we were progressing this year.

Separate sell-through dates are problematic for many reasons: they can be confusing for consumers and for enforcement; they keep products that can lead to exposures or contaminate water sources in circulation for longer; and they creative perverse incentives for "stock-piling"—that is producing an excess of products that can continue to be sold through. We therefore recommend against separate sell-through dates, especially given the generous transition period already provided for in the timelines.

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[9] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2771

[10] https://www.nysenate.gov/legislation/bills/2023/S4265

[11] https://www.nysenate.gov/legislation/bills/2023/S3529/amendment/A

[12] http://www3.cec.org/islandora/en/item/11777-furtheringunderstanding-migration-chemicals-from-consumer-products-en.pdf.

Under both California and New York's language, a narrow category of products--outdoor apparel for severe wet conditions that are not marketed to the general consumer--will have until 2028 to come into compliance but must disclose that they are made with PFAS chemicals between 2025 and 2028.

California and New York acted because numerous leading brands across the textiles category had already either eliminated PFAS in their products or had committed to eliminating PFAS before the deadlines in the laws and because alternatives are available and feasible. In fact, this is a trend we are seeing for many products, not just apparel. Companies that had moved out of PFAS or had commitments to eliminate PFAS include Levi's, Ikea, Keen, Gap, Zara, Patagonia, Jack Wolfskin, Osprey, and others. Since the passage of the California law, many certifications, including BlueSign, OekoTex, and AFFIRM have established standards limiting PFAS in clothing and textiles at levels similar to or below the thresholds in California's law.

***PFAS in artificial turf***

Artificial turf is another area of concern for PFAS exposure. The grass blades are made from fibers like nylon or plastic while the base is usually a crumb rubber made from used tires or plastic. PFAS in turf is generally a non-intentionally added ingredient but used as an extrusion aid. That is, PFAS helps prevent the polymer from sticking to the extruder.[13] Synthetic turf heats up much more than living lawns, even more than asphalt. It is one of the hottest surface materials. On hot days, the chemicals in the crumb rubber base can leach out into groundwater or come into direct contact with human skin – think young kids at soccer practice running and rolling around on this chemical surface. New York in its carpet recycling law banned PFAS and covered artificial turf is some applications.[14]

***PFAS in everyday household products***

The final area of PFAS exposure I will discuss is everyday products like cookware, paints, cleaning products, and dental floss. Minnesota addressed all these product categories in their PFAS law last year, and New York has proposal legislation addressing the same.[15] The good news is major product producers are starting to eliminate PFAS from these product categories and PFAS-free products are widely available. That said, legislation is critically important to: expand the availability of PFAS-free products; level the playing field and ensure safer products are available to all consumers, not just those who have the means to purchase more expensive non-toxic brands and alternatives; and reduce the further release of PFAS into the environment, including drinking water sources.

The ultimate message is PFAS are not essential in any of the products contained in the proposed legislation and there are ample alternatives available, and companies already must comply with requirements to remove them in other states. They should have no problem meeting the same requirements for Vermont. Vermont should act to protect its residents and

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[13] https://www.turi.org/content/download/12963/201149/file/TURI+fact+sheet+-+PFAS+in+artificial+turf.pdf
[14] Environmental Conservation Law § 27-3315
[15] https://www.nysenate.gov/legislation/bills/2023/S5648/amendment/C

its environment from these chemicals and phase them out in as many consumer products as possible. Thank you.

**Image 3: PFAS phase-outs by State[16]**

| Class-based PFAS phase-outs in key sectors with implementation years | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Products | Apparel | Carpets / Rugs | Cleaning Products | Cookware | Dental Floss | Fabric Treatments | Firefighting Foam | Food Packaging | Juvenile Products | Menstrual Products | Oil & Gas Products | Personal Care Products | Pesticides | Ski Wax | Sludge (biosolids) | Textile Articles |
| California | | ★ 2025 | 2021** | | | | 2022** | 2022 | 2023 | 2023 | | | 2025 | | | | ★ 2025 |
| Colorado | | | 2024 | | | | 2024 | 2024 | 2024 | 2024 | | ★ 2024 | ★ 2025 | | | | 2025 |
| Connecticut | | | | | | | | 2021 | 2023 | | | | | | | | |
| Hawaii | | | | | | | | 2024 | 2024 | | | | | | | | |
| Illinois | | | | | | | | 2025 | | | | | | | | | |
| Maine | 2030 | | 2023 | | | | 2023 | 2022 | 2022 | | | | | ★ 2030 | | ★ 2022 | |
| Maryland | | | 2024 | | | | | 2024 | 2024 | | | | 2025* | | | | |
| Minnesota | 2032 | | 2025 | 2025 | ★ 2025 | ★ 2025 | 2025 | 2024 | 2024 | 2025 | ★ 2025 | | 2025 | | 2025 | | 2025 |
| New Hampshire | | | | | | | | 2020 | | | | | | | | | |
| New York | | 2025 | 2024 | | | | | 2020 | 2022 | | | | | | | | |
| Oregon | | | | | | | | | 2025 | 2023** | | | 2027 | | | | |
| Rhode Island | | | | | | | | | 2024 | | | | | | | | |
| Vermont | | | ★ 2023 | | | | ★ 2023 | 2023 | 2023 | | | | | | 2023 | | |
| Washington | ★ 2023** | | 2023 | | | | 2023 | ★ 2020 | ★ 2022 | | | | 2025 | | | | 2023 |
| **Totals** | **3** | **2** | **8** | **1** | **1** | **1** | **6** | **12** | **12** | **4** | **1** | **1** | **6** | **1** | **2** | **1** | **4** |

* not class-based; covers some PFAS substances but not all
** ongoing regulation
★ indicates the state was the first to adopt policy banning PFAS in that specified key sector

[16] https://www.saferstates.org/wp-content/uploads/PFAS-Upstream-State-Action_3.27.2024.pdf

**Recently published health studies**

- Results provide evidence that perfluoroalkyl exposure, with potential future consequences, manifests in human fetus as early as 1st trimester of gestation. Exposures already linked with susceptibility, initiation, progression & exacerbation of wide range of metabolic diseases https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(23)00257-7/fulltext
- Prenatal exposure to some PFAS is associated with a higher risk of childhood leukemia, according to a large study published by the Journal of the National Cancer Institute https://academic.oup.com/jnci/advance-article/doi/10.1093/jnci/djad261/7471885
- New research shows that two types of per-and polyfluroalkyl substances spurred cancer cells to migrate to new positions, an indication that the chemicals could contribute to cancer metastasis. https://www.insideprecisionmedicine.com/topics/oncology/pfas-compounds-known-as-forever-chemicals-accelerate-cancer-migration/
- PFAS promote the migration of colorectal cancer spheroids and expression of proteins associated with metastasis https://pubs.acs.org/doi/10.1021/acs.est.3c04844
- PFAS exposure linked to decreased bone health in adolescents and young adults https://medicalxpress.com/news/2023-12-pfas-exposure-linked-decreased-bone.html
- PFAS mixture was associated with 49 metabolic pathways, most notably amino acid, carbohydrate, lipid and cofactor and vitamin metabolism https://pubs.acs.org/doi/10.1021/acs.est.3c07515
- Disruption of B cell development, specifically the impact on the maturation of antibody-secreting cells, as a potential mechanism underlying PFAS immunotoxicity (The disruption of B cell development by PFAS can compromise adaptive immunity, making organisms more vulnerable to stressors and pathogens) https://pubs.acs.org/doi/10.1021/acs.est.3c05109
- Study showed that PFAS exposure was significantly associated with reproductive hormone levels https://www.sciencedirect.com/science/article/abs/pii/S0013935123023575?via%3Dihub
- Children who were exposed to some PFAS chemicals in the womb displayed behavioral and emotional concerns by age 12 https://ehp.niehs.nih.gov/doi/10.1289/EHP12540
- Exposure to PFAS is associated with alterations in amino acid metabolism and lipid metabolism in adolescents and young adults. Study shows how PFAS exposure could lead to a range of chronic conditions, including thyroid disease, kidney disease, fatty liver disease, and some cancers https://ehp.niehs.nih.gov/doi/10.1289/EHP11372
- Lancet Oncology reporting on Carcinogenicity of perfluorooctanoic acid and perfluorooctanesulfonic acid https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(23)00622-8/fulltext?dgcid=raven_jbs_etoc_email