To the members of the Vermont State Legislature,

We the undersigned nursing and health organizations write to share our concern regarding legislation to regulate PFAS chemicals. We applaud you for your efforts to curb the spread of PFAS chemicals which are polluting our drinking water, farms, and communities. Known health effects include cancer, liver disease, decreased fertility, hormone disruption, developmental

harm, and effects on the immune system—including decreased response to vaccines.[1] PFAS contamination is widespread and communities and state water agencies are shouldering the increasing cost of cleanup. In order for Vermont's policies to address the PFAS crisis to be effective, it is critical that Vermont use a comprehensive, science-based and widely adopted definition of PFAS.[2]

Since 2018 the US Department of Defense, Congress and 23 states[3] have adopted a definition of PFAS as chemicals containing ''at least one fully fluorinated carbon atom".[4] [5] This definition is consistent with, similar to, and a simpler version of the definition stated by the Organisation for Economic Co-operation and Development (OECD).[6] OECD's definition was developed by an international group of scientists representing a variety of stakeholder viewpoints, including

[1] ATSDR. "Toxicological Profile for Perfluoroalkyls," May 2021. https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf; US EPA. "Interim Drinking Water Health Advisory: Perfluorooctane Sulfonic Acid (PFOS) CASRN 1763-23-1," June 2022. https://www.epa.gov/system/files/documents/2022-06/interim-pfos-2022.pdf; US EPA. "Interim Drinking Water Health Advisory: Perfluorooctanoic Acid (PFOA) CASRN 335-67-1," June 2022. https://www.epa.gov/system/files/documents/2022-06/interim-pfoa-2022.pdf; US EPA. "Drinking Water Health Advisory: Hexafluoropropylene Oxide (HFPO) Dimer Acid (CASRN 13252-13-6) and HFPO Dimer Acid Ammonium Salt (CASRN 62037-80-3), Also Known as 'GenX Chemicals.'" Office of Water, June 2022. https://www.epa.gov/system/files/documents/2022-06/drinking-water-genx-2022.pdf; US EPA. "Drinking Water Health Advisory: Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3)." Office of Water (4304T), June 2022. https://www.epa.gov/system/files/documents/2022-06/drinking-water-pfbs-2022.pdf.

[2] Safer States. "Accurate, Comprehensive, Widespread, and Protective: Explaining the PFAS Definition That Has Been Adopted by 22 States and the US Military," February 2024. https://www.saferstates.org/wp-content/uploads/PFAS-Definition-Factsheet_2.7.2024.pdf.

[3] See, for example, the NDAA for FY2022, Public Law 117-81 (passed the Senate by a vote of 88-11 & House by 363-70), §345(f)(4)("The term 'perfluoroalkyl or polyfluoroalkyl substance' means any man-made chemical with at least one fully fluorinated carbon atom."); The NDAA for FY2021, Public Law 116-283 (passed the Senate by a vote of 81-13 & House by 322-87) § 335(e)(2)("The term 'PFAS' means a perfluoroalkyl or polyfluoroalkyl substance with at least one fully fluorinated carbon atom, including the chemical GenX."); The NDAA for FY2020, Public Law 116-92 (passed the Senate by a vote of 86-8 and House by 377-48) § 332(c)(3)("The term ''PFAS'' means perfluoroalkyl and polyfluoroalkyl substances that are man-made chemicals with at least one fully fluorinated carbon atom.").

[4] Additional U.S. States Ban PFAS-Containing Products. (n.d.). UL Solutions. Retrieved September 7, 2023. https://www.ul.com/news/additional-us-states-ban-pfas-containing-products

[5] See, for example, the NDAA for FY2022, Public Law 117-81 (passed the Senate by a vote of 88-11 & House by 363-70), §345(f)(4)("The term 'perfluoroalkyl or polyfluoroalkyl substance' means any man-made chemical with at least one fully fluorinated carbon atom."); The NDAA for FY2021, Public Law 116-283 (passed the Senate by a vote of 81-13 & House by 322-87) § 335(e)(2)("The term 'PFAS' means a perfluoroalkyl or polyfluoroalkyl substance with at least one fully fluorinated carbon atom, including the chemical GenX."); The NDAA for FY2020, Public Law 116-92 (passed the Senate by a vote of 86-8 and House by 377-48) § 332(c)(3)("The term ''PFAS'' means perfluoroalkyl and polyfluoroalkyl substances that are man-made chemicals with at least one fully fluorinated carbon atom.").

[6] OECD. "Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance." Series on Risk Management, July 9, 2021. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO(2021)25&docLanguage=En.

scientists from the US EPA and multiple other foreign government agencies, industry and independent academic institutions.[7]

Recently industry groups have been making attempts to change the definition of PFAS or insert exemptions for certain types of PFAS into legislation.[8] Adopting an unscientific definition of PFAS in legislation would limit a state's ability to protect its communities and should be rejected for the following reasons:

1. The science-based definition of PFAS is already being used successfully around the country.[9] Adopting a new, unscientific definition with carve outs based on the policy preferences of certain industries would confuse a marketplace that is already responding to state regulation and transitioning away from PFAS.

2. All PFAS have at least one fully fluorinated carbon atom as described in the widely adopted definition. The carbon-fluorine bond is the strongest single bond in organic chemistry and gives PFAS their shared characteristic of persistence. This means that PFAS are extremely resistant to breakdown in the environment, leading some scientists to dub them "forever chemicals."

3. Different forms of PFAS are still PFAS. Most of the industries seeking exemptions or changes in the PFAS definition are doing so to preserve their use of certain types of fluorinated gasses and fluorinated polymers (e.g. a nonstick plastic coating on a pan or on certain clothing items) claiming that these types of PFAS are safe. This is false.

   The production of fluoropolymers is a major source of PFAS pollution.[10] Additionally PFAS are released over time from materials containing fluoropolymers. The majority of the highly publicized contamination in West Virginia and North Carolina is from the DuPont/Chemours facilities' production of fluoropolymers.[11] Information about the production, use and release of polymers is necessary to adequately address the PFAS crisis, and any definition that exempts fluoropolymers will seriously undermine efforts to protect people from PFAS.

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[7] "…(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–) is a PFAS."
[8] See, for example Lindauer, Shane. PFAS chemicals, Pub. L. No. 1399 (2024). https://iga.in.gov/pdf-documents/123/2024/house/bills/HB1399/HB1399.02.COMH.pdf.
[9] See, for example "Safer Products for Washington." Accessed February 2, 2024. https://ecology.wa.gov/waste-toxics/reducing-toxic-chemicals/washingtons-toxics-in-products-laws/safer-products.
[10] Lohmann, Rainer, Ian T. Cousins, Jamie C. DeWitt, Juliane Glüge, Gretta Goldenman, Dorte Herzke, Andrew B. Lindstrom, et al. "Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?" Environmental Science & Technology 54, no. 20 (October 20, 2020): 12820–28. https://doi.org/10.1021/acs.est.0c03244; Prevedouros, Konstantinos, Ian T. Cousins, Robert C. Buck, and Stephen H. Korzeniowski. "Sources, Fate and Transport of Perfluorocarboxylates." Environmental Science & Technology 40, no. 1 (January 1, 2006): 32–44. https://doi.org/10.1021/es0512475.
[11] Lohmann et al. (2020)

Similarly, many fluorinated gasses transform into other compounds like trifluoroacetic acid (TFA) which do not break down and can travel far distances from their point of release.[12] Dramatically increased levels of TFA correlate to the increased use of certain types of PFAS gasses in refrigeration and HVAC systems.[13]

4. Changing the scope of what a proposed policy covers while maintaining the science based definition is the best way to maintain Vermont's ability to protect its residents. For example a PFAS regulation can be adjusted based on policy considerations–such as a finding that a use is currently unavoidable because it is needed for the health, safety, or functioning of society– the *definition* of PFAS must remain based in science. Legislatively changing the science-based definition of PFAS to meet the policy preferences of particular industries is unscientific and constrains an agency's ability to properly manage PFAS in the future.

For states seeking to protect their residents from PFAS, it is vital to maintain consistency with well-established science-based laws and preserve the scientific integrity of public health policies.

Sincerely,

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[12] Arp, Hans Peter H., and Sarah E. Hale. "REACH: Improvement of Guidance and Methods for the Identification and Assessment of PMT/vPvM Substances." German Environment Agency, 2019.
[13] Pickard, Heidi M., Alison S. Criscitiello, Daniel Persaud, Christine Spencer, Derek C. G. Muir, Igor Lehnherr, Martin J. Sharp, Amila O. De Silva, and Cora J. Young. "Ice Core Record of Persistent Short-Chain Fluorinated Alkyl Acids: Evidence of the Impact From Global Environmental Regulations." Geophysical Research Letters 47, no. 10 (2020): e2020GL087535. https://doi.org/10.1029/2020GL087535.

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