



Testimony in opposition to HB 1399

February 14, 2024

Dear Chairman Niemeyer and members of the Senate Environmental Affairs committee,

We are writing today in opposition to Indiana House Bill (HB) 1399, which proposes a non-scientific and counterproductive definition for PFAS. Per- and polyfluoroalkyl substances (PFAS) represents a large class of thousands of synthetic, man-made substances which are characterized by the presence of one or more fully fluorinated carbon atoms. Often referred to as toxic “forever chemicals,” PFAS are extremely resistant to breakdown and can build up in humans and animals. They can also spread quickly in the environment and can be harmful to humans and many other species at extremely low doses. 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

The definition of PFAS proposed by HB 1399 would unnecessarily and unscientifically exempt many PFAS from consideration in future rules concerning PFAS. Further, it would create unnecessary confusion for the residents of Indiana as a broader, and scientifically agreed upon definition has already been enacted in previous Indiana Code.

The definition proposed in HB 1399 is inconsistent with definitions already adopted in Indiana, 22 other US states, and the US military.

Indiana and at least 22 other states have already adopted in legislation a scientifically grounded definition of PFAS as organic chemicals containing “at least one fully fluorinated carbon atom” including: [AR](#), [AZ](#), [CA](#), [CO](#), [CT](#), [GA](#), [KY](#), [HI](#), [IL](#), [IN](#), [LA](#), [MD](#), [ME](#), [MN](#), [NH](#), [NV](#), [NY](#), [OH](#), [OR](#), [RI](#),

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>.

[VA](#), [VT](#), and [WA](#).² Similarly, Congress has often adopted the same definition of PFAS, for example in enacting the National Defense Authorization Act in 2021, 2022 and 2023.³ This definition has been used in state and federal legislation since 2018.⁴

The definition proposed by HB 1399 is not scientifically justified.

A science-based definition of PFAS is critical for protecting public health. The carbon-fluorine bond is the strongest single bond in organic chemistry and gives PFAS their shared characteristic of extreme persistence. HB 1399 aims to exclude polymeric PFAS and those PFAS that are volatile or gaseous at ambient conditions, exclusions which are not scientifically justified.

The definition of PFAS as chemicals containing “at least one fully fluorinated carbon atom” is consistent with the definition stated by the Organisation for Economic Co-operation and Development (OECD)⁵ and adopted by the European Union in their pending regulation of PFAS.⁶ The OECD definition was developed by an international group of scientists representing a variety of stakeholder viewpoints, including scientists from the US EPA and multiple other foreign government agencies, industry (Chemours), and independent academic institutions. This international group of experts agreed that “PFASs are defined as fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom ...”⁷

There has been a misconception that the definition published in 2021 by OECD represented a significant change from an earlier 2018 OECD publication.⁸ The definition of PFAS used in a

² 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>
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 State of Washington Department of Ecology. (2021). Interim Chemical Action Plan for Per- and Polyfluorinated Alkyl Substances. <https://apps.ecology.wa.gov/publications/documents/1804005.pdf>

⁵ 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](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO(2021)25&docLanguage=En).

⁶ ECHA. “Registry of restriction intentions until outcome.” Accessed January 16, 2024. <https://echa.europa.eu/da/registry-of-restriction-intentions/-/dislist/details/0b0236e18663449b>.

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 OECD. “Toward a New Comprehensive Global Database of Per- and Polyfluoroalkyl Substances (PFASs): Summary Report On Updating the OECD 2007 List of Per- and Polyfluoroalkyl Substances (PFASs).” Series on Risk Management. Paris, May 4, 2018.

2018 OECD publication – chemicals that “contain at least one perfluoroalkyl moiety” is consistent with the 2021 OECD definition and that used by US states and the NDAA, all of which focus on the presence of the chemical structure that provides extreme persistence.

Due to resource constraints, the authors of the 2018 OECD publication limited the scope of the report to larger PFAS (those with 2-3 fully fluorinated carbons depending on their structure), while including the broader definition above in the report. However, the limited scope of the report has been misconstrued as a definition for PFAS. We share this history here to more finely illustrate the point that an internationally agreed upon and scientifically based definition of PFAS has been widely accepted and in use for half a decade and to counter efforts by industry to suggest there is a lack of scientific agreement regarding the definition of PFAS. Importantly, none of these definitions make exceptions for polymeric substances or volatile or gaseous substances, as doing so is not scientifically justified.

Exempting polymeric, volatile and gaseous PFAS will harm Indiana communities

In response to efforts to enact health protective PFAS policies, certain powerful industry voices have attempted to dodge regulation - by claiming certain PFAS are safe or by attempting to redefine which chemicals are PFAS. The definition proposed in HB 1399 aligns with these attempts. Two PFAS-industries that have attempted to be carved out of the larger class of PFAS, though they are responsible for widespread PFAS contamination, are the fluoropolymer and F-gas industries.

Industry’s claims of the inherent safety of fluoropolymers are unfounded as exposures during fluoropolymer production, use, and disposal have been linked to health harms.⁹ In fact, the production of polymers is a major source of PFAS pollution, especially from the monomers used to create the polymers (e.g. PFOA and GenX).¹⁰ The majority of the contamination in West

[https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV-JM-MONO\(2018\)7&doclanguage=en](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV-JM-MONO(2018)7&doclanguage=en).

⁹ Hays, Hannah L., and Henry Spiller. “Fluoropolymer-Associated Illness: Clinical Toxicology: Vol 52, No 8.” *Clinical Toxicology* 52, no. 8 (September 9, 2014): 848–55.

Centers for Disease Control and Prevention. “Severe Acute Respiratory Illness Linked to Use of Shoe Sprays -- Colorado, November 1993.” *Morbidity and Mortality Weekly Report* 42, no. 46 (November 26, 1993): 885–87.

Fluoropolymer Division. *Guide to the Safe Handling of Fluoropolymer Resins*. 5th ed. The Plastics Industry Association, 2019.

<https://www.turi.org/content/download/12048/189380/file/Guide%20to%20the%20Safe%20Handling%20of%20Fluoropolymer%20Resins%20v5%2020190130-1.pdf>.

Dale, Steve. “Fatal Fumes.” *Chicago Tribune*, March 25, 1995. <https://www.chicagotribune.com/news/ct-xpm-1995-03-26-9503260114-story.html>.

Daniels, Mary. “Stove Fumes Killing Caged Birds.” *Chicago Tribune*, March 8, 1986.

<https://www.chicagotribune.com/news/ct-xpm-1986-03-09-8601180125-story.html>.

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>.

Virginia and North Carolina is from the DuPont/Chemours facilities' production of fluoropolymers. Thus, information about the production, use and release of polymers is necessary to fully understand the scope of the PFAS crisis and it is essential that fluoropolymers are defined as PFAS. The definition proposed in HB 1399 will hamstring these efforts. For example, fluoropolymers are used in firefighter turnout gear. If this definition was used for the PFAS-free firefighter gear legislation recently passed in Indiana, it would significantly undermine the intent and effectiveness of this legislation. Firefighters would effectively be stripped of their right to know if PFAS are in their gear. Although this definition would not be applied retroactively, this situation demonstrates the limitations this definition will impose on Indiana's ability to protect its citizens.

The F-gas industry produces fluorinated chemicals used in various applications including refrigeration, blowing agents and propellants. Many of these chemicals either are PFAS or break down to PFAS chemicals that meet the "at least one fully-fluorinated carbon" definition that is already in Indiana Code. A primary breakdown component of many of these chemicals is trifluoroacetic acid (TFA), the smallest analog of the well-studied perfluorooctanoic acid (PFOA). The European Chemicals Agency lists TFA as very persistent and very mobile (vPvM), meaning that once released into the environment, TFA does not readily degrade and that it can travel far distances from its point of release.¹¹ Dramatically increased levels of TFA and another ultrashort chain PFAS, perfluoropropionic acid (PFPrA), in the environment correlate temporally with the implementation of the Montreal Protocol which called for an increase in fluorinated chemistries to replace the use of chlorofluorocarbon-based refrigerants in an effort to meet climate goals.¹² Unsupported claims from the refrigeration industry that there are natural sources of TFA have now been refuted.¹³ Furthermore, safer alternatives are available or in development for F-gas uses and the exemption of F-gases from PFAS regulation will remove all incentives to transition to safer alternatives.

In summary, the definition proposed in HB 1399 is not scientifically justified and will hamper Indiana's ability to protect its residents from further PFAS harms. We urge you to vote no on HB 1399 should it come up for a vote in the committee.

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 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.

¹² 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>.

¹³ Singh, Rajiv R., and Dimitrios K. Papanastasiou. "Comment on 'Scientific Basis for Managing PFAS as a Chemical Class.'" *Environmental Science & Technology Letters* 8, no. 2 (February 9, 2021): 192–94. <https://doi.org/10.1021/acs.estlett.0c00765>.

Joudan, Shira, Amila O. De Silva, and Cora J. Young. "Insufficient Evidence for the Existence of Natural Trifluoroacetic Acid." *Environmental Science: Processes & Impacts* 23, no. 11 (November 17, 2021): 1641–49. <https://doi.org/10.1039/D1EM00306B>.

Sincerely,



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