Accurate, Comprehensive, Widespread, and Protective

Explaining the PFAS Definition that has been Adopted by 23 States and the US Military

safer states An Alliance for a Healthier World

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Per- and polyfluoroalkyl substances (PFAS) are harmful chemicals used in thousands of products ranging from cookware and clothing to paint and firefighting foam. Known as toxic "forever chemicals" because they do not break down in the environment, PFAS have contaminated more than 4,600 drinking water, industrial and military sites across all 50 states, polluting the drinking water of an estimated 200 million Americans.[1] The threat of these toxic and persistent chemicals is so great that many states are requiring PFAS phase-outs. Maine, Minnesota and Washington are in the process of eliminating almost all PFAS found in consumer products, and the European Union has proposed eliminating all uses of PFAS.[2]

23 States and the US military have adopted a common PFAS definition

At least 23 states have 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, VA, VT, and WA.[3] Similarly, Congress has often adopted the same definition of PFAS, for example in enacting the National Defense Authorization Act in 2021, 2022 and 2023.[4] Having this single widely adopted definition creates important consistency for manufacturers, retailers, and regulators; this definition has been used in state and federal legislation since 2018.[5]

The "One Fully Fluorinated Carbon" Definition is Accurate and Scientifically Sound

The presence of "at least one fully fluorinated carbon atom" is the defining feature of PFAS compounds, and it is what makes these chemicals incredibly persistent in the environment and virtually impossible to break down. Carbon-fluorine bonds are the strongest bonds in organic chemistry, and a "fully fluorinated carbon atom" means that all of the hydrogens on a carbon atom have been replaced by fluorine.[6] Defining PFAS in a different way is likely to be arbitrary and, even more important, likely to exclude many persistent and toxic PFAS chemicals. Notably, the "one fully fluorinated carbon atom" is very similar to the definition created by a group of international scientists via the Organization for Economic Cooperation and Development (OECD) and adopted by the European Union in their pending regulation of PFAS.[7]

Non-Comprehensive PFAS Definitions of PFAS Can Harm Communities

The definition of PFAS has serious implications for legislation, regulation, litigation, monitoring, research, and impacted communities. Having a non-comprehensive and inaccurate definition for PFAS can result in regrettable substitutions by encouraging a shift to PFAS not covered by the definition. This also shields some of the most widely used "forever" chemicals from restrictions and clean-up.

Communities have a right to know what PFAS they are exposed to and have all PFAS cleaned up. In their fight to gain access to human health and toxicity studies, residents of North Carolina's Cape Fear basin who have been exposed to hundreds of PFAS released from a nearby Chemours facility, petitioned the EPA to test for 54 PFAS that had been found in local resident's blood, drinking water, surface water, and produce.[8] The EPA removed 15 PFAS from the petitioner's requests – including two PFAS detected in residents' blood – because they did not fit the PFAS definition being used by one EPA office at the time.[9] The result is that residents will get inadequate information about the forever chemicals in their bodies. Similarly, using a non-comprehensive PFAS definition could mean that only some PFAS contaminants are cleaned up while others continue to impact communities.

States Can't Rely on the EPA for a PFAS Definition

As noted above, the EPA has been inconsistent and unclear when it comes to the question of what set of chemicals should be labeled a PFAS. In August 2023, the EPA announced that it would not have any single formal definition for PFAS, but would instead take a "case-by-case" approach for what the agency considers a PFAS. This move prompted Dr. Linda Birnbaum, the former head of the National Institute of Environmental Health Sciences and the National Toxicology Program, to respond: "This is not a new definition – it is a lack of definition, and it makes no sense... It is just going to lead to terrible confusion."[10]

Modify Timelines, Not Definitions

To protect human health and the environment, it is time to phase out the entire class of PFAS compounds. To do so, policymakers need to enact and support a comprehensive definition of PFAS that includes fluoropolymers and fluorinated gasses. Government agencies may determine that there needs to be different timelines for the phase out of PFAS in certain products, especially for those where the use is currently necessary for health, safety and functioning of society (such as pharmaceuticals) where a feasible alternative is not currently available.[11] In order to accommodate these needs, state governments should maintain the comprehensive class-based PFAS definition and adjust timelines to allow for the transition to safer alternatives.

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[1] Environmental Working Group. (2023). Mapping the PFAS contamination crisis: New data show 4,621 sites in 50 states, the District of Columbia and two territories. https://www.ewg.org/interactive-maps/pfas_contamination; Andrews, D., Naidenko, O. (2020). Population-Wide Exposure to Per- and Polyfluoroalkyl Substances from Drinking Water in the United States. Environmental Science & Technology Letters. 7, 12, 931-936. https://pubs.acs.org/doi/10.1021/acs.estlett.0c00713

[2] Associated Press. (2021, July 17). Maine requires so-called PFAS to be phased out by 2030. https://apnews.com/article/business-government-and-politics-environment-and-nature-maine-be458f81f85f3c01d509ccfa2573b6cd; Minnesota Pollution Control Agency. (n.d.) PFAS ban. https://www.pca.state.mn.us/get-engaged/pfas-ban; Toxic-Free Future. (2023, December 6). Washington State takes next step on PFAS "forever chemicals." https://toxicfreefuture.org/press-room/washington-state-takes-next-step-on-pfas-forever-chemicals; European Commission. (2021). The EU's chemicals strategy for sustainability towards a toxic-free environment. https://ec.europa.eu/environment/strategy/chemicals-strategy_en

[3] 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

[4] 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.").

[5] 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

[6] The Science of PFAS: Finding Strength in the Single Bond. (2021, May 13). Waste 360. https://www.waste360.com/pfas-pfoas/the-science-of-pfas-finding-strength-in-the-single-bond

[7] Wang, Z., Buser, A. M., Cousins, I. T., Demattio, S., Drost, W., Johansson, O., Ohno, K., Patlewicz, G., Richard, A. M., Walker, G. W., White, G. S., & Leinala, E. (2021). A New OECD Definition for Per- and Polyfluoroalkyl Substances. Environmental Science & Technology, 55(23), 15575–15578. https://doi.org/10.1021/acs.est.1c06896; European Chemicals Agency | ECHA. (2023, March 22). Registry of restriction intentions until outcome: Per- and polyfluoroalkyl substances (PFAS). https://echa.europa.eu/da/registry-of-restriction-intentions/-/dislist/details/0b0236e18663449b

[8] Center for Environmental Health. (2020, October 10). Petition to require health and environmental testing under the Toxics Substances Control Act on certain PFAS manufactured by Chemours in Fayetteville, North Carolina. Center for Environmental Health, Cape Fear River Watch, Clean Cape Fear, Democracy Green, Toxic Free NC, and the NC Black Alliance (petitioners). www.epa.gov/sites/default/files/2020-10/documents/chemours_pfas_testing_petition_final.pdf

[9] US Environmental Protection Agency. (2021, December 28). Letter to Robert M. Sussman. https://www.epa.gov/system/files/documents/2021-12/pfaspetitionresponse.pdf

[10] Perkins, T. (2023, August 18). EPA's new definition of PFAS. The Guardian. https://www.theguardian.com/environment/2023/aug/18/epa-new-definition-pfas-forever-chemicals

[11] Bălan, S., Andrews, D., Blum, A., Diamond, M., Fernández, S., Harriman, E., Lindstrom, A., Reade, A., Richter, L., Sutton, R., Wang, Z., & Kwiatkowski, C. (2023). Optimizing Chemicals Management in the United States and Canada through the Essential-Use Approach. Environmental Science & Technology, 57(4), 1568–1575. https://doi.org/10.1021/acs.est.2c05932