UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Addition of Certain Per- and Polyfluoroalkyl Substances; Community Right-to-Know Toxic Chemical Release Reporting, Advance Notice of Proposed Rulemaking, 84 Fed. Reg. 66,369 (Dec. 4, 2019)

Comments of Earthjustice, Alaska Community Action on Toxics, Beyond Plastics, Breast Cancer Prevention Partners, Buxmont Coalition for Safer Water, Center for Environmental Health, Center for Science and Democracy at the Union of Concerned Scientists, Citizens Campaign for the Environment, Citizens for Safe Water Around Badger (CSWAB), Clean and Healthy New York, Clean Cape Fear, Clean Water Action, Code PFAS, Conservation Law Foundation, Cook Inletkeeper, Ecology Center, Environmental Health Strategy Center, Environmental Justice Task Force - Tucson, Environmental Working Group, Gustavus PFAS Action Coalition (GPAC), Healthy Babies Bright Futures, Judith Enck, Merrimack Citizens for Clean Water, Natural Resources Defense Council, Oregon Environmental Council, PFOAProjectNY, Responsible Purchasing Network, Safer Chemicals Healthy Families, Safer States, Science and Environmental Health Network, Sierra Club, Testing for Pease, Toxics Action Center, Upstream, Wake Up Alaskans to the Toxic Environmental Reality (WATER), Westfield Residents Advocating for Themselves (WRAFT), Your Turnout Gear and PFOA, Zero Waste Washington

Submitted via Regulations.gov
Docket No. EPA-HQ-TRI-2019-0375

February 3, 2020

The undersigned groups submit these comments on the advance notice of proposed rulemaking published by the United States Environmental Protection Agency ("EPA" or "Agency") in which the Agency announced that it is "consider[ing] proposing a future rule on adding certain per- and polyfluoroalkyl substances (PFAS) to the list of toxic chemicals subject to reporting under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and section 6607 of the Pollution Prevention Act (PPA)," known as the Toxics Release Inventory ("TRI"). Addition of Certain Per- and Polyfluoroalkyl Substances; Community Right-to-Know Toxic Chemical Release Reporting, Advance Notice of Proposed Rulemaking, 84 Fed. Reg. 66,369, 66,369 (Dec. 4, 2019) ("ANPRM").

Since publication of the ANPRM, Congress has mandated multiple actions related to adding PFAS to the TRI. *See* National Defense Authorization Act for Fiscal Year 2020, Pub. L. No. 116-92, § 7321, 133 Stat. 1198, 2277–81 (2019) ("NDAA"). Specifically, the NDAA directly adds 160 PFAS to the TRI effective January 1, 2020.[1] In addition, the NDAA

[1] *See* EPA, Chemicals Added to the Toxics Release Inventory Pursuant to Section 7321 of the National Defense Authorization Act (Jan. 16, 2020), https://www.epa.gov/sites/production/files/2020-01/documents/tri_non-cbi_pfas_list_1_16_2020-6.pdf.

establishes a mandatory process under which EPA must add additional PFAS to the TRI, and requires EPA to review all remaining PFAS to determine if they should also be added to the TRI.[2] The NDAA dramatically alters the landscape against which the ANPRM was issued, as there were no PFAS in the TRI when the ANPRM was published in the Federal Register, and no mandate that any be added. Given this major shift, EPA must update its plan for how it will address PFAS under the TRI. Congress has made it known that it wants the public to receive information about releases of PFAS; EPA must comply with the language and spirit of the NDAA by expeditiously moving forward with rulemaking to ensure that release of any PFAS into the environment is disclosed.

Based on the mandates of the NDAA and the extensive breadth of research and available data on health and environmental dangers of PFAS as explained more fully below, we urge the Agency to:

1. Immediately commence the process mandated by Congress in NDAA § 7321(d)(1) to "determine whether" PFAS that are not subject to "immediate inclusion" in the TRI as a result of NDAA § 7321(b)(1) "meet any one of the criteria described in [42 U.S.C. § 11023(d)(2)] for inclusion in the [TRI]." This review must include all PFAS that are currently listed as active on the TSCA Inventory, or have been otherwise approved for manufacture, processing, distribution in commerce, or use through the TSCA pre-manufacture notice ("PMN") process, the low volume exemption ("LVE"), the low release and exposure exemption ("LoREX"), or the polymer exemption for new chemicals.

2. Conclude that all PFAS on the TSCA Inventory, active in commerce, or in use via PMN exemptions, meet at least one of the criteria for listing in the TRI.

3. List all of these PFAS as a chemical category that includes individual compounds listed by their unique Chemical Abstracts Services Registry Number ("CAS number") to ensure that information about releases of specific PFAS, not just the broad class of PFAS, is publicly disclosed.

4. Lower the reporting threshold for all PFAS to the lowest level required for highly persistent, bioaccumulative, and toxic ("PBT") substances, currently 10 pounds.

5. Expand the entities subject to TRI reporting so the requirements apply to all owners and operators of facilities in any Standard Industrial Classification ("SIC") code.

6. Promptly review all claims for protection from disclosure made for any PFAS currently set for immediate inclusion to the TRI.

[2] NDAA § 7321(c)–(d), 133 Stat. at 2278–81.

7. Ensure that the TRI listing provides meaningful information to the public by requiring all entities that currently manufacture, process, distribute, or use PFAS, or entities that apply to commence such activities for new PFAS, to develop:

a) Standards for individual PFAS that will be made publicly and freely available for independent research lab testing;

b) Validated testing methodology for individual PFAS in environmental and biological media, including but not limited to drinking water, ground water, soil, atmospheric deposition, blood serum, and fish tissue.

8. Establish mechanisms that allow for additional PFAS to be added to the TRI as they are approved for commerce or discovered in the environment.

I. PFAS have contaminated communities across the country, yet these communities have not been informed because no PFAS were in the TRI until last month.

PFAS are a large, complex, and ever-expanding class of more than 6,000 synthetic compounds characterized by fluorine atoms bonded to a carbon chain.[3] The carbon-fluorine bond is "one of the strongest ever created by man," making PFAS extremely persistent in the environment, and difficult to break down or remediate.[4] Despite some differences in chemical structure from compound to compound, PFAS share a set of "unique physical and chemical characteristics imparted by the fluorinated region of the molecule."[5] Often known as "forever chemicals," PFAS persist in the environment for "years, decades, or longer."[6] Once released into the environment, PFAS are highly soluble and thus mobile through surface and

[3] *See* EPA, *Per- and Polyfluoroalkyl Substances Chemistry and Behavior*, CLU-IN, https://clu-in.org/contaminantfocus/default.focus/sec/Per-_and_Polyfluoroalkyl_Substances_(PFASs)/cat/Chemistry_and_Behavior/ (last updated Jan. 24, 2020). *See also* Buck, R. C., Franklin, J., Berger, U., Conder, J. M., Cousins, I. T., De Voogt, P., ... & van Leeuwen, S. P. (2011). Perfluoroalkyl and polyfluoroalkyl substances in the environment: Terminology, classification, and origins. *Integrated Environmental Assessment and Management*, *7*(4), 513–541, https://doi.org/10.1002/ieam.258.

[4] *Examining the Federal Response to the Risks Associated with Per- and Polyfluoroalkyl Substances (PFAS): Hearing Before the S. Comm. on Env't & Pub. Works*, 116th Cong. (Mar. 28, 2019) (Testimony of Linda S. Birnbaum, Director, Nat'l Inst. of Envtl. Health Sci. & Nat'l Toxicology Program, Nat'l Insts. of Health), at 2, https://www.epw.senate.gov/public/index.cfm/hearings?Id=918A6066-C1F1-4D81-A5A0-F08BBE06D40B&Statement_id=D2255C99-7544-42CA-B9DC-0D4F11CCB964.

[5] Lindstrom, A.B., M.J. Strynar, and E.L. Libelo. (2011). Polyfluorinated Compounds: Past, Present, and Future. *Environmental Science & Technology*, *45*(19), 7954–7961, https://pubs.acs.org/doi/abs/10.1021/es2011622.

[6] EPA, EPA-823-R1-8004, Per- and Polyfluoroalkyl Substances (PFAS) Action Plan 9 (Feb. 2019), https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf ("PFAS Action Plan").

groundwater.[7] Many PFAS are detected in surface and drinking water, food and food packaging, consumer products and textiles, and are ubiquitous in environmental media such as soil, air and dust.

According to EPA, "approximately 600 PFAS are manufactured (including imported) and/or used in the United States" as currently listed on the TSCA Inventory.[8] This number, however, does not reflect the reality of PFAS production, use, and contamination in the country since additional PFAS have entered commerce via exemptions to the new chemical approval process, such as the LVE, LoREX and polymer exemptions. Manufacturers have begun to phase out production and use of long-chain PFAS such as perfluorooctanoic acid ("PFOA") and perfluorooctanesulfonic acid ("PFOS"), yet are now replacing these chemicals with structurally similar, shorter-chain PFAS.[9] In fact, replacement PFAS compounds may be equally, if not more, mobile in aqueous media, resulting in widespread water and soil contamination that is particularly difficult to capture and treat.[10] As a result, even small releases of PFAS have significant and long-lasting effects.

PFAS contamination is a national crisis. As of October 2019, nearly 1,400 known locations in all but one state have been affected by PFAS contamination, including at least 446

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[7] *See* Wang, Z., DeWitt, J. C., Higgins, C. P., & Cousins, I. T. (2017). A Never-Ending Story of Per-and Polyfluoroalkyl Substances (PFASs)?. *Environmental Science & Technology*, *51*(5), 2508–2518, https://pubs.acs.org/doi/10.1021/acs.est.6b04806; Kotthoff, M., & Bücking, M. (2018). Four Chemical Trends Will Shape the Next Decade's Directions in Perfluoroalkyl and Polyfluoroalkyl Substances Research. *Frontiers in Chemistry*, *6*, 103, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5895726/.

[8] 84 Fed. Reg.at 66,371.

[9] For example, perfluoroalkylether acid compounds consist of fluorinated segments joined by ether linkages. *See* Scheringer, M., Trier, X., Cousins, I. T., de Voogt, P., Fletcher, T., Wang, Z., & Webster, T. F. (2014). Helsingør Statement on poly-and perfluorinated alkyl substances (PFASs). *Chemosphere*, *114*, 337–339. Significantly higher levels of shorter-chain PFAS such as perfluorobutanoic acid (PFBA) and hexafluoropropylene oxide dimer acid (HFPO-DA, of which the ammonium salt is known as GenX) have been detected in water and air since the launch of EPA's PFOA Stewardship Program. *See* EPA, *Risk Management for Per- and Polyfluoroalkyl Substances (PFAS) under TSCA, PFOA Stewardship Program*, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfass (last updated July 20, 2018); Buck et al. (2011), *supra* note 3 at 524; *see also* Sun, M., Arevalo, E., Strynar, M., Lindstrom, A., Richardson, M., Kearns, B., & Knappe, D. R. (2016). Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina. *Environmental Science & Technology Letters*, *3*(12), 415–419, https://pubs.acs.org/doi/full/10.1021/acs.estlett.6b00398; Zhang, X., Lohmann, R., Dassuncao, C., Hu, X. C., Weber, A. K., Vecitis, C. D., & Sunderland, E. M. (2016). Source Attribution of Poly-and Perfluoroalkyl Substances (PFASs) in Surface Waters from Rhode Island and the New York Metropolitan Area. *Environmental Science & Technology Letters*, *3*(9), 316–321.

[10] Brendel, S., Fetter, É., Staude, C., Vierke, L., & Biegel-Engler, A. (2018). Short-chain perfluoroalkyl acids: environmental concerns and a regulatory strategy under REACH. *Environmental Sciences Europe*, *30*(1), 9, at 4, https://doi.org/10.1186/s12302-018-0134-4.

communities where PFAS have been detected in drinking water supplies.[11] At least six million Americans drink water containing PFAS levels exceeding EPA's lifetime health advisory of 70 parts per trillion ("ppt") for PFOA and PFOS.[12] The EPA lifetime health advisory, however, is neither adequately health-protective nor enforceable; thus, certain states, such as Michigan[13] and New Jersey,[14] have moved forward with setting their own, more stringent standards. Moreover, nearly 99 percent of Americans have PFAS in their blood.[15] For these reasons, the director of the Centers for Disease Control and Prevention's National Center for Environmental Health

[11] Envtl. Working Grp., *Mapping the PFAS Contamination Crisis: New Data Show 1,398 Sites in 49 States*, https://www.ewg.org/interactive-maps/2019_pfas_contamination/ (last visited Jan. 29, 2020). *See also* Bill Walker, Envtl. Working Grp., *Mapping the PFAS Contamination Crisis: New Data Show 610 Sites in 43 States* (May 6, 2019), https://www.ewg.org/news-and-analysis/2019/04/mapping-pfas-contamination-crisis-new-data-show-610-sites-43-states.

[12] Hu, X. C., Andrews, D. Q., Lindstrom, A. B., Bruton, T. A., Schaider, L. A., Grandjean, P., ... & Higgins, C. P. (2016). Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants. *Environmental Science & Technology Letters*, *3*(10), 344–350, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5062567. These estimates may undercount the total number of communities harmed by PFAS contamination, because (1) EPA's drinking water standard does not truly reflect unsafe drinking water levels or aggregate, cumulative impacts of contamination from multiple PFAS; and (2) EPA's available testing methods have limited capacity to test only a few dozen out of thousands of chemicals. In addition, EPA's reporting limits of 40 ppt for PFOS and 20 ppt for PFOA are considerably higher than the actual sensitivity of existing laboratory equipment. For example, the number of water utilities testing positive for PFAS would increase from 198 (as reported under the third Unregulated Contaminant Monitoring Rule, or UCMR 3, at EPA's detection limits) to over 1,000 if results at 5 ppt for PFOA and PFOS were also reported. *See* David Andrews, Envtl. Working Grp., *Report: Up to 110 Million Americans Could have PFAS-Contaminated Drinking Water* (May 22, 2018), https://www.ewg.org/research/report-110-million-americans-could-have-pfas-contaminated-drinking-water.

[13] *See* Mich. PFAS Action Response Team Human Health Workgroup, Mich. Dep't of Health & Human Servs., Public Health Drinking Water Screening Levels for PFAS (Feb. 22, 2019), https://www.michigan.gov/documents/pfasresponse/MDHHS_Public_Health_Drinking_Water_Screening_Levels_for_PFAS_651683_7.pdf.

[14] *See* N.J. Dep't of Envtl. Protection, *Contaminants of Emerging Concern*, https://www.nj.gov/dep/srp/emerging-contaminants/ (last updated Mar. 13, 2019).

[15] Calafat, A. M., Wong, L. Y., Kuklenyik, Z., Reidy, J. A., & Needham, L. L. (2007). Polyfluoroalkyl Chemicals in the U.S. Population: Data from the National Health and Nutrition Examination Survey (NHANES) 2003–2004 and Comparisons with NHANES 1999–2000. *Environmental Health Perspectives*, *115*(11), 1596–1602, https://doi.org/10.1289/ehp.10598. *See also* Agency for Toxic Substances & Disease Registry ("ATSDR"), PFAS: An Overview of the Scence and Guidance for Clinicians on Per- and Polyfluoroalkyl Subtances (2019), https://www.atsdr.cdc.gov/pfas/docs/ATSDR_PFAS_ClinicalGuidance_12202019.pdf.

stated that the presence and concentrations of PFAS in U.S. drinking water is "one of the most seminal public health challenges for the next decades."[16]

In February 2019, the Agency made a clear commitment in its PFAS Action Plan to consider PFAS for listing in the TRI, as a crucial step towards its commitment to address PFAS exposure in the environment and drinking water, and prevent future PFAS contamination.[17] Impacted communities, however, have not been informed of PFAS contamination from industrial or military sources because no PFAS were listed in the TRI until January 1, 2020. Many known cases of contaminated drinking water in the U.S. are a direct consequence of industrial PFAS production, processing, or waste disposal, including but not limited to: Cottage Grove, Minnesota; Parkersburg, West Virginia; Dalton, Georgia; Decatur, Alabama; Fayetteville, North Carolina; and Hastings, Michigan.[18] In fact, researchers estimate that nearly 80 percent of perfluoroalkyl carboxylate substances released to the environment directly result from the manufacture and use of fluoropolymers.[19] Contamination from use of PFAS-based fire-fighting foams on military bases have also affected nearly 300 sites across the country, with the highest detected concentrations at certain sites reaching over 20 million ppt.[20] Inappropriate treatment of wastes containing PFAS at manufacturing sites or at industrial and commercial use sites also releases PFAS into air, water, and soil, and these wastes may further contain unintended and unaccounted PFAS byproducts from the manufacturing processes.[21] In addition, new

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[16] Pat Rizzuto et al., *CDC Sounds Alarm on Chemical Contamination in Drinking Water*, Bloomberg Env't. (Oct. 17, 2017), https://news.bloombergenvironment.com/environment-and-energy/cdc-sounds-alarm-on-chemical-contamination-in-drinking-water.

[17] PFAS Action Plan, *supra* note 6.

[18] Hopkins, Z. R., Sun, M., DeWitt, J. C., & Knappe, D. R. (2018). Recently Detected Drinking Water Contaminants: GenX and Other Per-and Polyfluoroalkyl Ether Acids. *Journal-American Water Works Association, 110*(7), 13–28.

[19] Prevedouros, K., Cousins, I. T., Buck, R. C., & Korzeniowski, S. H. (2006). Sources, Fate and Transport of Perfluorocarboxylates. *Environmental Science & Technology, 40*(1), 32–44. https://pubs.acs.org/doi/10.1021/es0512475

[20] *See* Press Release, Envtl. Working Grp., New PFAS Detections Reported at 90 Additional Army Installations (Sept. 11, 2019), https://www.ewg.org/release/new-pfas-detections-reported-90-additional-army-installations; Envtl. Working Grp., *Highest Levels of PFAS Contamination in Groundwater at U.S. Military Installations*, https://cdn3.ewg.org/sites/default/files/u352/Top%20100%20PFAS.pdf?_ga=2.160683069.1271404521.1580227120-1034968272.1580227120 (last visited Jan. 29, 2020).

[21] OECD/UNEP Glob. PFC Grp, Synthesis Paper on Per- and Polyfluorinated Chemicals (PFCs), at 20–21 (2013). *See also, e.g.*, Lindstrom, A. B., Strynar, M. J., Delinsky, A. D., Nakayama, S. F., McMillan, L., Libelo, E. L., ... & Thomas, L. (2011). Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well water in Decatur, Alabama, USA. *Environmental Science & Technology, 45*(19), 8015–8021; N.C. Dep't of Envtl. Quality, *GenX Frequently Asked Questions*, https://files.nc.gov/ncdeq/GenX/FAQ_updated_100417-5.pdf (last visited Jan. 29, 2020) (stating that GenX is "also produced as a byproduct during other manufacturing processes and it may have been present in the environment for many years before being produced commercially as GenX").

replacement chemicals that manufacturers are now using are often precursors to perfluoroalkyl acids ("PFAAs").[22] Precursor compounds break down or biotransform into terminal PFAAs (such as PFOA and PFOS), resulting in further contamination of the environment and endangering the health of American communities.[23] For instance, recent EPA testing of drinking water treatment plants detected 10 or more PFAS in nearly all of the studied public water systems.[24] Without adequate reporting information about industrial releases and testing methods, the toxic mixture of PFAS entering people's water, homes, and the environment is completely unknown and inscrutable.

II. The NDAA requires EPA to determine whether PFAS not automatically included in the TRI through NDAA mandates should be added to the Inventory.

The PFAS regulatory landscape has shifted substantially in the time since the ANPRM was released, due to the December 20, 2019 enactment of the NDAA. In addition to authorizing funding for the U.S. Department of Defense, section 7321 of the NDAA introduced three mechanisms for adding per- and polyfluoroalkyl chemicals to the TRI: 1) immediate inclusion, 2) inclusion following assessment, and 3) inclusion following determination. With the exception of EPA's mandate to review PFAS for confidential business information, discussed *infra*, the first two mechanisms are self-effectuating, and will occur by operation of law. The final mechanism, "inclusion following determination," lays out a detailed procedure by which EPA must review *all* remaining known PFAS. This process requires EPA to complete its review by December 20, 2021, and add any PFAS it determines meet the EPCRA standards for inclusion to the TRI within two years of that determination.[25]

This mandate to review all remaining PFAS is pursuant to Section 7321(d)(1) of the NDAA. The statute states that EPA "shall determine whether the substances and classes of substances" described as "perfluoroalkyl and polyfluoroalkyl substances and classes of perfluoroalkyl and polyfluoroalkyl substances not described in subsection (b)(1)" meet the

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[22] Kotthoff & Bücking (2018), *supra* note 7.

[23] Precursors consist of polyfluoroalkyl substances and polymers with partially fluorinated alkyl chain and the non-fluorinated side groups, which are more susceptible to degradation mechanisms (i.e. reactions such as atmospheric oxidation, metabolism, and hydrolysis), thus leading to the formation of the remaining perfluoroalkyl moeties. See D'eon, J. C., & Mabury, S. A. (2007). Production of Perfluorinated Carboxylic Acids (PFCAs) from the Biotransformation of Polyfluoroalkyl Phosphate Surfactants (PAPS): Exploring Routes of Human Contamination. *Environmental Science & Technology, 41*(13), 4799–4805. https://pubs.acs.org/doi/abs/10.1021/es070126x; Butt, C. M., Muir, D. C., & Mabury, S. A. (2014). Biotransformation pathways of fluorotelomer-based polyfluoroalkyl substances: A review. *Environmental Toxicology & Chemistry, 33*(2), 243–267. https://setac.onlinelibrary.wiley.com/doi/epdf/10.1002/etc.2407

[24] Boone, J. S., Vigo, C., Boone, T., Byrne, C., Ferrario, J., Benson, R., ... & Glassmeyer, S. T. (2019). Per-and polyfluoroalkyl substances in source and treated drinking waters of the United States. *Science of the Total Environment, 653*, 359–369. https://doi.org/10.1016/j.scitotenv.2018.10.245.

[25] NDAA § 7321(d), 133 Stat. at 2280.

criteria to be added to the TRI.[26] The statute goes on to list a number of PFAS, or categories of PFAS, that EPA must review.[27] Importantly, the statute prefaces this list with the term "including," an indicator that the list is not exhaustive, but rather serves to highlight specific PFAS that should receive individualized review.

A look at courts' interpretation of the statutory use of "including" provides clarity. When interpreting the meaning of the term "including" in the Federal Communications Act, the Tenth Circuit stated "[n]othing in [the statute] indicates that Congress intended to depart from the normal use of "include" as introducing an illustrative—and non-exclusive—list of entities . . . ." *Directv v. Crespin*, 224 Fed. Appx. 741, 748 (10th Cir. 2017). So is the case here. The NDAA requires EPA to review both the PFAS listed in Section 7321(d)(2), *and* all remaining PFAS. Had Congress meant otherwise, it could simply have listed in Section 7321(d)(2) the specific PFAS and classes of PFAS subject to determination, but it did not do so.

Given the context, we understand the term "perfluoroalkyl and polyfluoroalkyl substances and classes of perfluoroalkyl and polyfluoroalkyl substances not described in subsection (b)(1)," as used in Section 7321(d)(2), to mean all of the approximately 600 per- and polyfluorinated substances currently listed as active on the TSCA Inventory, and any additional PFAS which have been otherwise approved for manufacture, processing, distribution in commerce, or use through the TSCA PMN process, the LVE, the LoREX, and the polymer exemption. While PFAS exist that are not authorized for use in commerce, it is reasonable to assume that Congress meant Section 7321(d) to apply to any PFAS approved by EPA for commerce. This is bolstered by the fact that Section 7321 already builds on TSCA's framework, such as by adding PFAS to the TRI based on their inclusion in Significant New Use Rules.

III. EPA should conclude that all PFAS active in commerce meet the TRI listing criteria as a class.

Under EPCRA Section 313(d)(2),[28] EPA may add a chemical to the TRI if the chemical is known to cause or can reasonably be anticipated to cause: (1) "adverse acute human health effects at concentration levels that are reasonably likely to exist beyond facility site boundaries as a result of continuous, or frequently recurring, releases;" (2) chronic health effects in humans such as cancer, "serious or irreversible reproductive dysfunctions," or neurological disorders; or (3) "a significant adverse effect on the environment because of its toxicity, toxicity and persistence in the environment, or its toxicity and tendency to bioaccumulate in the environment.

A growing body of research shows that all subclasses of per- and polyfluoroalkyl substances are known to meet at least one, if not multiple, of these listing criteria. PFAS as a class pose similar threats to both human health and the environment that have been well-

[26] *Id.* § 7321(d)(1)–(2).

[27] *Id.* § 7321(d)(2).

[28] 42 U.S.C. § 11023(d)(2).

demonstrated for long-chain PFAS such as PFOA and PFOS. *First*, with regard to criteria 313(d)(2)(A) and 313(d)(2)(B), extensive research has identified both acute and chronic human health endpoints that are sensitive to exposure to PFAS. Government and independent academic research, including large epidemiological studies of human PFAS exposure, has shown that many PFAS bioaccumulate in the bodies of living organisms and are highly toxic. Exposure to even relatively low levels of PFAS is associated with liver damage, high cholesterol, thyroid disease, decreased antibody response to vaccines, asthma, decreased fertility, and decreased birth weight.[29] ATSDR's 2018 Draft Toxicological Profile for Perfluoroalkyls found associated adverse developmental and reproductive health effects from exposure to nearly all of the fourteen PFAS studied, of varying structures and chain lengths.[30] Animal studies have demonstrated that many PFAS induce hepatoxicity (showing effects on endpoints such as liver weight and fatty acid β-oxidation activity), immunotoxicity, and cancer.[31] Importantly, data also suggest that PFAS may affect the growth, learning, and immune response of infants and older children.[32]

Moreover, newer research has found that the more recently introduced, short-chain replacement PFAS are associated with similar health effects as long-chain PFAS such as PFOA and PFOS.[33] Notably, both short-chain and long-chain PFAS are toxic to the liver, thyroid, and other organs.[34] In a decision recommending the elimination from use of approximately 150 PFAS, the United Nations Persistent Organic Pollutants Review Committee affirmed that "a transition to the use of short-chain per- and polyfluoroalkyl substances (PFASs) for dispersive applications such as fire-fighting foams is not a suitable option from an environmental and human health point of view."[35] A 2015 statement signed by over 200

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[29] *See* ATSDR, Toxicological Profile for Perfluoroalkyls (Draft for Public Comment), at 5–6 (June 2018) ("ATSDR Toxicological Profile"), https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf.

[30] ATSDR Toxicological Profile at 5–6.

[31] *Id.* at 6–15.

[32] Rappazzo, K., Coffman, E., & Hines, E. (2017). Exposure to Perfluorinated Alkyl Substances and Health Outcomes in Children: A Systematic Review of the Epidemiologic Literature. *International Journal of Environmental Research and Public Health, 14*(7), 691, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5551129/.

[33] Cheryl Hogue, *Short-Chain and Long-Chain PFAS Show Similar Toxicity, US National Toxicology Program Says*, Chem. & Eng'g News (Aug. 24, 2019), https://cen.acs.org/environment/persistent-pollutants/Short-chain-long-chain-PFAS/97/i33; Conley, J. M., Lambright, C. S., Evans, N., Strynar, M. J., McCord, J., McIntyre, B. S., ... & Wilson, V. S. (2019). Adverse Maternal, Fetal, and Postnatal Effects of Hexafluoropropylene Oxide Dimer Acid (GenX) from Oral Gestational Exposure in Sprague-Dawley Rats. *Environmental Health Perspectives, 127*(3), 037008, https://doi.org/10.1289/EHP4372.

[34] Cheryl Hogue, *supra* note 33.

[35] Persistent Organic Pollutants Review Comm., UNEP, Decision POPRC-14/2: Perfluorooctanoic Acid (PFOA), Its Salts and PFOA-Related Compounds (2018),

international scientists and experts similarly called for action to "prevent the[] replacement" of long-chain PFAS with hazardous fluorinated alternatives.[36] The departing director of the National Institute for Environmental Health Science, in testimony before the Senate Environment and Public Works Committee on March 28, 2019, has thus advised that "[a]pproaching PFAS as a class for assessing exposure and biological impact is the most prudent approach to protect public health."[37]

Second, EPA should make the finding that PFAS as a class "can reasonably be anticipated to cause" an adverse effect on the environment, satisfying the criteria specified in section 313(d)(2)(C), because PFAS have been well-demonstrated to be persistent and bioaccumulative in the environment. Indeed, EPA itself notes that "the strong carbon-fluoride bonds of PFAS make them resistant to degradation and thus highly persistent in the environment."[38] The Agency has stated that "[s]hort-chain PFAS are as persistent in the environment as their longer-chain analogues."[39] While EPA has claimed that short-chain PFAS "are generally less bioaccumulative,"[40] recent research involving short-chain PFAS have found that such chemicals are more bioaccumulative than previously believed and that the bio-persistence of short-chain PFAS and their breakdown products has not been correctly measured in earlier studies.[41]

EPA acknowledges that a chemical category approach—adding PFAS as a class to the TRI—would be appropriate. For TRI listing purposes, EPA has previously categorized chemicals within a single class based on similar hazard traits and environmental fate. For example, in adding nonylphenol ethoxylates as a category in 2018, EPA noted that it "believes

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http://chm.pops.int/TheConvention/POPsReviewCommittee/Meetings/POPRC14/Overview/tabid/7398/ctl/Download/mid/21545/Default.aspx?id=17&ObjID=26011.

[36] Blum, A., Balan, S. A., Scheringer, M., Trier, X., Goldenman, G., Cousins, I. T., ... & Peaslee, G. (2015). The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs). *Environmental Health Perspectives*, *123*(5), A107–A111, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4421777/.

[37] Testimony of Linda S. Birnbaum, *supra* note 4, at 13.

[38] 84 Fed. Reg. at 66,370.

[39] PFAS Action Plan at 13.

[40] *Id.* at 11.

[41] *See, e.g.*, Wang, Z., Cousins, I. T., Scheringer, M., & Hungerbuehler, K. (2015). Hazard assessment of fluorinated alternatives to long-chain perfluoroalkyl acids (PFAAs) and their precursors: status quo, ongoing challenges and possible solutions. *Environment International*, *75*, 172–179, https://www.ncbi.nlm.nih.gov/pubmed/25461427; Kabadi, S. V., Fisher, J., Aungst, J., & Rice, P. (2018). Internal exposure-based pharmacokinetic evaluation of potential for biopersistence of 6: 2 fluorotelomer alcohol (FTOH) and its metabolites. *Food and Chemical Toxicology*, *112*, 375–382, https://www.ncbi.nlm.nih.gov/pubmed/29331735; Pérez, F., Nadal, M., Navarro-Ortega, A., Fàbrega, F., Domingo, J. L., Barceló, D., & Farré, M. (2013). Accumulation of perfluoroalkyl substances in human tissues. *Environment International*, *59*, 354–362, https://doi.org/10.1016/j.envint.2013.06.004.

that the 'toxicity' of a chemical includes the toxicity of degradation products that are produced as a result of the chemical's release to the environment. These degradation products are a direct result of the chemical properties of the parent compound that determine its environmental fate, and as such should be considered part of the chemical's toxicity." Addition of Nonylphenol Ethoxylates Category; Community Right-to-Know Toxic Chemical Release Reporting, 83 Fed. Reg. 27,291, 27,294 (June 12, 2018). Thus, "[w]here it may reasonably be anticipated, based on available data, that the listed chemical would readily degrade into another chemical that would cause the adverse effect, EPA is acting reasonably and within its grant of authority in listing the precursor to the toxic degradation product." Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know, 59 Fed. Reg. 61,432, 61, 445 (Nov. 30, 1994). Given the well-documented evidence of widespread contamination from precursor compounds, degradation of PFAS in the environment, and the fact that all PFAS subclasses can lead to or contribute to the release of terminal PFAAs,[42] even PFAS with limited toxicological data will warrant addition to the TRI according to EPA's precedent determinations.

While the NDAA outlines the requirement to review and determine which PFAS should be added to the TRI, the scientific evidence accumulated over decades of independent and agency research demonstrates that PFAS should be added to the TRI as a class. PFAS are persistent, bioaccumulative, and highly toxic to humans and other organisms, and their continued production and use without any monitoring poses a significant danger to public health and the environment. Furthermore, PFAS contamination from industrial sources nearly always occurs as complex aqueous mixtures of compounds, rather than individual compounds.[43] Requiring the addition to the TRI of all PFAS that are currently active in commerce in the country is crucial to illuminating the dangers of the largely unregulated dumping of this cocktail of dangerous PFAS into our nation's environment. This makes the need for inclusion clear —EPA should immediately add all PFAS in commerce or subject to PMN exemptions to the TRI.

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[42] Use of all PFAS subclasses can lead to PFAA release into the environment through industrial waste and thus exposure to PFAAs at some point in the chemicals' life cycle. PFAS products either degrade to form PFAAs, release PFAAs if incinerated, or require PFAAs for their manufacture (such as fluoropolymers and fluorotelomer-based substances), often resulting in PFAA impurities in the final product. *See* Cal. Envtl. Protection Agency, Product – Chemical Profile for Treatments Containing Perfluoroalkyl or Polyfluoroalkyl Substances for Use of Converted Textiles or Leathers 32 (Nov. 2019), https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/11/Product-Chemical-Profile-for-Treatments-with-PFASs.pdf.

[43] *See, e.g.*, Nakayama, S., Strynar, M. J., Helfant, L., Egeghy, P., Ye, X., & Lindstrom, A. B. (2007). Perfluorinated Compounds in the Cape Fear Drainage Basin in North Carolina. *Environmental Science & Technology, 41*(15), 5271–5276, https://pubs.acs.org/doi/abs/10.1021/es070792y; Barzen-Hanson, K. A., Roberts, S. C., Choyke, S., Oetjen, K., McAlees, A., Riddell, N., ... & Field, J. A. (2017). Discovery of 40 classes of per-and polyfluoroalkyl substances in historical aqueous film-forming foams (AFFFs) and AFFF-impacted groundwater. *Environmental Science & Technology, 51*(4), 2047–2057, https://pubs.acs.org/doi/abs/10.1021/acs.est.6b05843.

IV. Given the sources of contamination and the nature of PFAS, EPA's regulation must lower the reporting thresholds for PFAS and expand the SIC codes.

EPA notes in the ANPRM that "[t]o appropriately capture release information of PFAS, EPA is considering establishing reporting thresholds lower than the statutory thresholds of 25,000 pounds for manufacturing or processing and 10,000 pounds for otherwise using listed chemicals."[44] Fortunately, Congress stepped in and set the reporting threshold at 100 pounds for all PFAS added to the TRI pursuant to the NDAA.[45] This substantially lower reporting threshold is necessary because it is imperative that the public is informed about the use of PFAS, which are dangerous to health at levels substantially below 25,000 and 10,000 pounds. It is critical for reporting to be mandated *whenever* releases could have public health consequences, and for PFAS, releases at virtually any level could harm human health and the environment. EPA acknowledged this concern in the ANPRM, noting that "establishing reporting thresholds for PFAS that are lower than the usual statutory thresholds" might be important "due to concerns for [PFAS'] environmental persistence and bioaccumulation potential."[46] However, while the 100-pound threshold represents substantial progress, it remains too high to be health protective. The NDAA notes that this 100-pound limit might be insufficient, and mandates that EPA "determine whether revision of the threshold" is warranted by December 20, 2024.[47] EPA should use this review process to commit to lowering the threshold to 10 pounds, the threshold set for PBT chemicals with very high persistence and bioaccumulative values, such as PFAS.[48]

Once a chemical is listed in the TRI, reporting requirements apply to facilities in Standard Industrial Classification ("SIC") codes 20 through 39, though EPA has authority to add additional SIC codes.[49] PFAS are processed, used, and released in a variety of industries, not just in the manufacturing sector. Accordingly, EPA must expand the applicable SIC codes to encompass all sectors that use and release PFAS, including all facilities that use aqueous film-forming foam.

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[44] 84 Fed. Reg. at 66,371.

[45] NDAA §§ 7321(b)(2)(A), (c)(2)(A).

[46] 84 Fed. Reg. at 66,370.

[47] NDAA §§ 7321(b)(2)(B), (c)(2)(B).

[48] There are currently 16 PBT chemicals and 5 PBT chemical compound categories subject to TRI reporting. Note that EPA has implemented lower reporting thresholds chemical categories of mercury compounds and dioxin and dioxin-like compounds at 10 lbs and 0.1 grams, respectively. *See* EPA, *Persistent Bioaccumulative Toxic (PBT) Chemicals Covered by the TRI Program*, https://www.epa.gov/toxics-release-inventory-tri-program/persistent-bioaccumulative-toxic-pbt-chemicals-covered-tri (last updated Feb. 7, 2017).

[49] 42 U.S.C. § 11023(b).

V. EPA must swiftly conduct the confidentiality reviews mandated by the NDAA to finalize the addition of PFAS to the TRI.

As explained above, 160 PFAS have been identified for addition to the TRI. However, prior to the introduction of any PFAS to the TRI, the NDAA requires a confidential business information ("CBI") review for all PFAS currently subject to confidentiality claims.[50] If EPA ultimately determines that the PFAS at issue qualify for protection from disclosure, it must add the PFAS to the TRI in a manner that does not disclose protected information.[51] This review has the potential to delay the effective addition of many PFAS to the TRI. EPA has already noted that "[t]he names and CASRNs for some of the chemicals listed under 40 CFR 721.9582 and/or 40 CFR 721.10536 are subject to a claim of protection from disclosure. . . . Therefore, the chemicals that are subject to a claim of protection from disclosure will not be added to the [TRI] until EPA completes the process provided by Section 7321(e) of the NDAA."[52] To ensure full public disclosure when PFAS are released into the environment, it is imperative that EPA review any claims of protection from disclosure immediately. The chemicals set for inclusion in the TRI on January 1, 2020 are highly dangerous chemicals that have already been determined by Congress to pose a threat to public health and the environment. Review for CBI should not be allowed to stymie disclosure.

VI. EPA must take steps to improve the accessibility and efficacy of listing PFAS in the TRI.

As discussed above, EPA should list all PFAS individually in the TRI. In addition, EPA should increase the utility of this information by organizing reporting data for the PFAS chemical category into the following aggregated amounts: total PFAS, total long-chain PFAS (>8 carbons), total PFAS subject to an Agency regulatory action (e.g. under a TSCA Section 5e Consent Order or Significant New Use Rule). These aggregated data should be available online where TRI data are available.

The introduction of all commercially available PFAS as a class to the TRI should not be where EPA ends its regulatory action, as many further actions are necessary to ensure the public has adequate information about PFAS and to protect human health from this PBT class.

First, EPA must ensure that the public has complete information about the continued production and use of short-chain PFAS and precursor PFAS to replace longer-chain PFAS, including the locations and quantity at which newer PFAS are entering the environment, so we

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[50] The CBI provision requires EPA to both review the confidentiality claim, and require the claimant to reassert and substantiate, or resubstantiate, its claim in accordance with TSCA, 15 U.S.C. 2613(f).

[51] NDAA § 7321(e)(2).

[52] EPA, Chemicals Added to the Toxics Release Inventory Pursuant to Section 7321 of the National Defense Authorization Act (Jan. 16, 2020), https://www.epa.gov/sites/production/files/2020-01/documents/tri_non-cbi_pfas_list_1_16_2020-6.pdf.

do not replicate the actions that led to the current crisis. Going forward, all PFAS manufactured and used commercially must be tracked and monitored so, as EPA notes, the information can "be used as a starting point in evaluating . . . exposures and the risks posed by such exposures."[53] While we strongly oppose EPA allowing any new PFAS to be introduced into commerce, if any additional PFAS are approved (via PMN or LVE, LoREX, or polymer exemption), at minimum EPA must require the automatic addition of any such PFAS to the TRI before they enter commerce.

Second, any and all PFAS detected by the U.S. Geological Survey in the nationwide sampling effort of "highly fluorinated compounds in estuaries, lakes, streams, springs, wells, wetlands, rivers, aquifers, and soil" mandated by section 7333(a) of the NDAA should be automatically added to the TRI, if they are not already listed. Additionally, any PFAS detected from the National Atmospheric Deposition Program[54] should also be added the TRI, as this project provides a long-term record of the presence of PFAS deposition in the environment from air emission sources. These actions are designed to enable the public to identify the sources of PFAS that evidence shows have been released into the environment.

Third, to ensure that the TRI listing provides meaningful information to the public, EPA should require all entities that currently manufacture, process, distribute, or use PFAS, or entities that apply to commence such activities for new PFAS, to develop: (a) standards for individual PFAS that will be made publicly and freely available for independent research lab analysis; (b) validated laboratory methods to detect and quantify individual PFAS in environmental and biological media, including but not limited to drinking water, ground water, soil, atmospheric deposition, blood serum, and fish tissue. The availability of standards and validated testing methods is imperative for researchers, scientists, and communities to detect, quantify, and understand the extent of harmful PFAS contamination. As stated in the PFAS Action Plan, "identifying PFAS is the first step in understanding if PFAS exposure may be of concern of a community" and "validated analytical methods for measuring PFAS and PFAS precursors in multiple environmental media enable a more accurate understanding of PFAS occurrence and exposures."[55] Currently, EPA's Method 537.1 to determine PFAS in drinking water is limited to a mere 18 substances, and the Agency has yet to finalize analytical methods for other environmental media such as wastewater, solids and air/stack emissions.[56] Similarly, standards

[53] 84 Fed. Reg. at 66,370.

[54] *See About NADP*, Nat'l Atmospheric Deposition Program, http://nadp.slh.wisc.edu/NADP/ (last visited Jan. 30, 2020).

[55] PFAS Action Plan at 25.

[56] *See* EPA, EPA-600-R-18-352, Method 537.1: Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) (Nov. 2018), https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=343042&Lab=NERL. *See also* EPA, *Research on Per- and Polyfluoroalkyl Substances (PFAS)*,

and reference samples for the majority of PFAS in commerce and other emerging PFAS contaminants are nonexistent or not publicly available. Yet alternative methods for detecting PFAS in blood serum are already showing an increasing trend of unidentified organofluorine in blood serum samples, which suggest that people are being exposed to new and unidentifiable PFAS.[57] Thus, EPA should require all manufacturers to develop and make freely available standards for all PFAS listed in the TRI.

Additionally, EPA should develop a comprehensive federal repository for these PFAS standards (i.e. a "PFAS library"), such that independent labs, academic and community researchers, and state agencies may access them. In its PFAS Action Plan, EPA has already committed to both expanding testing methods for drinking water and other media and developing a PFAS data inventory, to allow sharing of soil, air, water, fish tissue, and other PFAS monitoring.[58] Absent the development of such standards and validated methods, the requirement to list PFAS in the TRI cannot be enforced, undermining the purpose of EPCRA: to give effect to communities' "right to know" about release of toxic chemicals.

With the spiraling PFAS contamination crisis in this country from decades of unreported and unmonitored industrial, commercial and military releases, EPA must step up to its commitments to manage PFAS risks as a class. We urge EPA to take these steps immediately to expedite the identification and information sharing about PFAS releases, in order to protect our health and environment from harmful exposure to this dangerous class of substances.

Submitted by:

Earthjustice
Alaska Community Action on Toxics
Beyond Plastics
Breast Cancer Prevention Partners
Buxmont Coalition for Safer Water
Center for Environmental Health
Center for Science and Democracy at the Union of Concerned Scientists
Citizens Campaign for the Environment
Citizens for Safe Water Around Badger (CSWAB)
Clean and Healthy New York
Clean Cape Fear
Clean Water Action
Code PFAS

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https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas (last updated Nov. 26, 2019).

[57] Yeung, L. W., & Mabury, S. A. (2016). Are humans exposed to increasing amounts of unidentified organofluorine? *Environmental Chemistry, 13*(1), 102–110. http://www.publish.csiro.au/en/EN15041.

[58] PFAS Action Plan at 4, 6.

Conservation Law Foundation
Cook Inletkeeper
Ecology Center
Environmental Health Strategy Center
Environmental Justice Task Force – Tucson
Environmental Working Group
Gustavus PFAS Action Coalition (GPAC)
Healthy Babies Bright Futures
Judith Enck, Former EPA Region 2 Administrator
Merrimack Citizens for Clean Water
Natural Resources Defense Council
Oregon Environmental Council
PFOAProjectNY
Responsible Purchasing Network
Safer Chemicals Healthy Families
Safer States
Science and Environmental Health Network
Sierra Club
Testing for Pease
Toxics Action Center
Upstream
Wake Up Alaskans to the Toxic Environmental Reality (WATER)
Westfield Residents Advocating for Themselves (WRAFT)
Your Turnout Gear and PFOA
Zero Waste Washington